

## DOCTOR OF PHILOSOPHY

### Developing supply chain methodologies for small to medium sized enterprises

Newlands, David J.

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**DEVELOPING SUPPLY CHAIN METHODOLOGIES FOR SMALL TO MEDIUM SIZED ENTERPRISES**

**DAVID J. NEWLANDS B.ENG**

**A thesis submitted in partial fulfilment  
of the University's requirements  
for the Degree of Doctor of Philosophy**

**NOVEMBER 2001**

**Coventry University  
in collaboration with  
IBM UK Ltd, M E Ltd and NP Ltd.**

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## Thesis Summary

This thesis summarises research focused on the requisites required to implement improvement initiatives successfully. Processes used to enhance supply chain performance initiatives are examined. The core hypothesis is that a preconditioning programme provides support for progressive organisations, irrespective of size or position in the supply chain.

An interpretation matrix developed as a result of action research with M E Ltd was tested with NP Ltd and its suppliers. During search conferences the matrix was found to add value by serving as a common platform to record then compare observations and agree a common understanding between participants.

Based on qualitative descriptions of training and learning in organisations from the 1950s to the 1970s, Barrington's model has three levels: 'systematic approach' predominating in the 1950s, 'appraisal approach' developed extensively in the 1960s and an 'attitude to continuous improvement' that was promoted after the 1970s fuel crises. This model was used as the basis for selecting collaborating establishments. The literature review concludes that conventional supplier development has the attributes of the systematic approach, which is considered the least effective level.

M E Ltd was considering introducing appraisal, had few attributes of the systematic approach, and had an attitude for continuous improvement. A company specific survey was undertaken that led to a series of remedial actions which were identified as a preconditioning programme prior to supplier development. NP Ltd selected leaders by attitude, had institutionalised appraisals and once the core group was established, trained employees with systematic techniques. AAP Ltd had the attitude and systematic techniques, yet did not have appraisal systems.

Principal conclusions of this are:

- These case studies suggest companies can have any two of Barrington's levels. As a result, an alternate depiction of Barrington's model is suggested.
- The cases indicate that preconditioning can occur within a company, from customer to suppliers and from suppliers to customer.
- The cases suggest product development roadmap stability as a root cause for negative effects to the relationship between customer and supplier.

# Acknowledgements

A thesis of this type cannot be achieved without the contribution of many others.

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From Coventry University, I wish to thank Phil Southey for setting the terms of reference and access to exploratory research data. Thanks to Prof. Emeritus Stan Harvey, and Clive Collis. My gratitude goes to Dr Derek Steeple for his support and proofs. Errors in this thesis remain my responsibility.

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I am indebted to Dr Simon Reay, Ken Reay and Bob Shepard of Artifex Flexible Tubes Ltd, Cranleigh in Surrey, for providing key foundation experiences.

A great vote of thanks to my parents Margaret and John Newlands for their love and encouragement. Thanks to Mrs Nelly Thomas for grounding these achievements.

D. J. Newlands, November 2001.

This thesis is dedicated to the memory of R. M. "Rae" Hawley. 1910-1996.

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Appendix 6: Conference and Journal Papers

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Newlands, D. and Southey, P. (1994) "Which information system is the most Advantageous? How should OEMs relate to Material Suppliers?" 3rd IPSERA Annual Conference, University of Glamorgan/UGCS Ltd., March 28-30, pp 363-372.

Newlands, D. and Southey, P. (1994) "Material Supplier, Component Supplier and OEM Information Flow Effects" 10th National Conference on Manufacturing Research, Loughborough University of Technology, September 5-7<sup>th</sup>, pp 14-18.

Newlands, D. and Southey, P. (1994) "Supply Networks: Can Customers Drive Supplier Improvements?" 10th International Marketing and Purchasing (IMP) Annual Conference - Meeting the Challenges of New Frontiers - Groningen, The Netherlands, Sept 29 - Oct 1, Volume 2, pp 433-444.

Newlands, D., Davis, A. and Southey, P. (1995) "Motivation To Change the Supply Chain" 4th Annual IPSERA Conference, Birmingham UK April 11-12, in the volume of Manufacturing and Production Procurement.

Sherwin, G. Newlands, D. and Cotton, W. (1995) "The Use of a Design Methods Matrix to Improve Interdisciplinary Communication" The Institution of Electrical Engineers - Computing and Control Division Concurrent engineering - Getting it right first time! Poster session at Savoy Place, 8th June.

Sherwin, G. Newlands, D. and Cotton, W. (1995) "The Use of a Design Methods Matrix to Improve Interdisciplinary Communication" 2nd National Conference on Product Design Education, Coventry University, 10-11th July, section two paper four.

Newlands, D. and Southey, P. (1995) "Supply Chain Management: Towards and Integrated Approach" 12th Irish Manufacturing Committee Conference, Cork, Ireland, September 6-8, pp 373-380.

Newlands, D. and Southey, P. (1995) "Business Resource Development: Towards and Integrated Approach" 12th Systems Science Conference, Wroclaw, Poland September 12-15, pp 440-444.

Newlands, D. (1995) "Business Resource Development and Supply Chain Management: Towards and Integrated Approach" Business Process Reengineering Conference 1995, Successful Implementation First Time Round! EPIC Event Management, October 20th, Bournemouth, UK.

Newlands, D. (1995) International Management Communications "Supplier Development: Measuring, Developing and Improving Supplier Performance" Conference, December 11-12th,.

Newlands, D., Sherwin, G. and Porter, B. (1996) "The Development of a Multi-Enterprise Integrated Digital Product Definition System" CEEDA '96 Conference, EPIC Event Management, January 18-19th.

Newlands, D. and Southey, P. (1996) "Development Programme Targets: Top Down or Bottom Up implementation?" 1996 NAPM Annual Academic Conference, March 21-23. Portland State University, Portland Oregon, United States of America

Newlands, D. and Steeple, D. (2000) Logistics and Supply Chain Development: Part One - Lessons from Japan: Automotive and Electronic Industries, Control, The Institute of Operations Management, May, pp15-17.

Newlands, D. and Steeple, D. (2000) Logistics and Supply Chain Development: Part Two - Design of, and Design for Logistics, Control, The Institute of Operations Management, June, pp21-23.

Newlands, D. and Steeple, D. (2000) Logistics and Supply Chain Development: Part Three - A Quantitative Simulation of Logistics Opportunities, Control, The Institute of Operations Management, July, pp21-23.

## List of Acronyms

AD	Advanced Development
B2B	Business To Business
BP	Best Practice. Honda BP approach identifies Best Position, Best Productivity, Best Product, Best Price, Best Partners
BPR	Business Process Reengineering
BS	British Standard
BTR	Belbin's Team Roles
CD-ROM	Compact Disk - Read Only Memory
CE	Concurrent Engineering
dB	Decibel
DFL	Design For Logistics
DKB	Daichi Kanyo Ginko - First National Bank of Japan
DOL	Design OF Logistics
DTI	Department of Trade and Industry
ERC	Engineering Change Request
FMEA	Failure Mode and Effect Analysis
IMD	In-Mould Decoration
IMVP	International Motor Vehicle Program
JIT	Just in time
Ltd	Limited Company
MAT	Manufacturing Appreciation Training
MBTI	Myers-Briggs Type Indicator
MRPII	Manufacturing Requirements Planning
NIC	Newly Industrialised Country
NRC	National Research Council
NRE	Non-Recuring Expenditure
OEM	Original Equipment Manufacturer
OIC	Older Industrialised Country
OLS	Operations, Logistics and Sourcing
OPP	Original Process Plant
P&A	Personnel and Administration (Department)
QA	Quality Assurance
QS	Quality Standard
R&R	Repeatability and Reproduceability
R&T	Research and Technology
SCM	Supply Chain Management
SD	Supplier Development
SME	Small to Medium sized Enterprise
SPC	Statistical Process Control
SPP	Subsidiary, or Secondary Process Plant
TCO	Total Cost of Ownership
TNA	Training Needs Analysis
UCS	Unconditionally Constructive Strategy
UK	United Kingdom
US	United States (of America)
VAT	Value Added Tax
WCM	World Class Manufacturing



# Chapter 1

## The Origins of the Project

"Madmen in authority ... are distilling their frenzy from some academic scribbler of a few years back"

Keynes, J. (1936, p383).

### 1.1 Introduction

This research programme focuses on requisites required to implement improvement relationships successfully between companies that make up a sustainable network that produce manufactured goods as profitably as possible. Processes used to enhance supply chain performance initiatives are examined. This thesis therefore reviews paradigms that impact on corporate structures and purchasing, and learning and change management from an holistic perspective.

This chapter outlines paradigms that created the context within which companies operate. Sources of competitive advantage are identified based on the goal of achieving and sustaining world-class performance. Emulating world-class supply chain networks is a strategically important goal because supply chains compete rather than original equipment manufacturers. It is also important due to the complexity of manufacturing and global sourcing opportunities.

### 1.2 Small, Medium and Large Companies

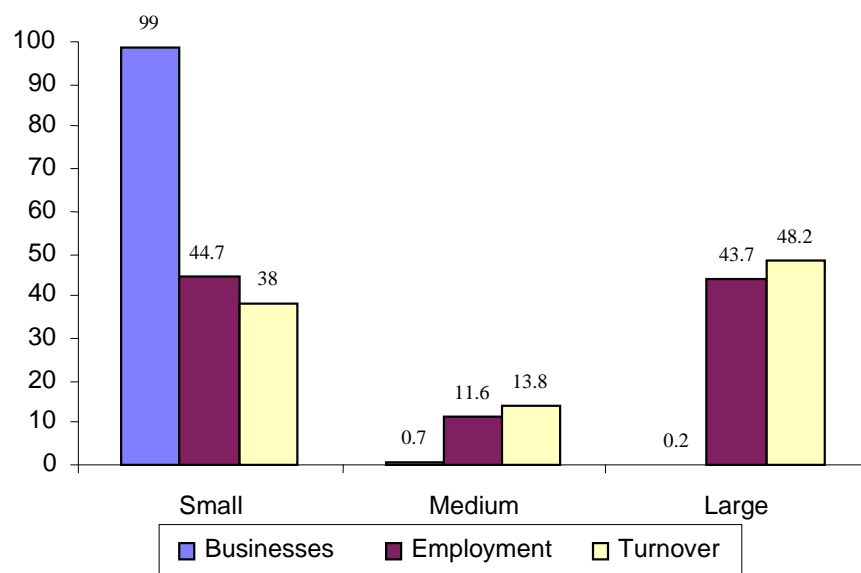
The majority of literature available on enhancing performance and improvement initiatives is based on large, typically international or global corporations. As shown in figure 1.1, economies have a significant and important proportion of small and medium sized enterprises (SMEs). The title of this thesis specifies an emphasis on providing SMEs with philosophies, tools and techniques appropriate to these businesses' requirements. The term

SME can be classified by a number of arbitrarily set criteria including number of employees, turnover, balance sheet value and the equity percentage held by various shareholders. This is principally due to the diversity of principal business activities (50% full-time equivalent or more) that registered companies focus on. Hence, some clarification of what is meant in this thesis by the term SME subsequently is provided.

Definitions that delineate small and medium sized enterprises from large companies include section 249 of the Companies Act 1985, the Department of Trade and Industry (DTI). The DTI nominally delineate terminology used in its publications thus:

Micro firm : 0 – 9 employees  
 Small firm : 0 – 49 employees (includes micro)  
 Medium firm : 0 - 249 employees  
 Large firm : over 250 employees.

“In practice schemes ... nominally ... adopt a variety of working definitions depending on their objectives” [1]. The DTI also provides graphical evidence, shown in figure 1.1, of the number of value added tax (VAT) registered companies in the UK, percentage of employees involved and turnover for small, medium and large businesses.



**Figure 1.1 Proportion of Businesses, employment and turnover in small, medium and large businesses, start 1998 (DTI)**



In this research thesis, an SME is defined as an independent company or sub-element of a larger corporation that is managed as an independent profit centre, which does not have a dominant position in its market or business sector. Thus, the business activities do not have the power to shape the market yet are flexible enough to respond to rapid market force changes, and entrepreneurial management styles can be a subjectively assessed attribute of the business entity. Each of the companies used for the case studies in this thesis complies with this conception of a small to medium sized enterprise.

The number of shop floor employees at M E Ltd fluctuated between 120 and 320, stabilising at approximately 250. M E Ltd was managed as an independent entity, supplying two vehicle assemblers while openly competing against other companies in the group and other non-equity competitors. Head count at NP Ltd grew from 35000 to over 50000 globally during the period of active research. NP Ltd manages each of its manufacturing and product development centres as separate businesses. NP UK made use of only one assembly line in a small annex plant. Each line is treated as a separate profit centre and typically has 50 employees divided into four shift groups. The factory unit used had three lines. In 1999, NP Ltd consolidated its UK financial records for accounting purposes to limit the analysis possible of data released to the public. Each product development programme is managed as a separate entity, with established employees and contractors operating as portfolio workers. Specialist support employee groups, particularly Operations, Logistics and Sourcing financially were treated as consolidated profit centre based internal consultancies. PU, PF, YM, and AAP each employ between 50 and 249 employees and can usefully be defined as medium sized firms based on the DTI criteria. Dependent on whether product is being produced and the volume demanded, UDC Ltd varies between small and medium sized status.

### **1.3 Profitability and Optimisation from Corporate Structures**

Manufacturing firms create value by converting commodity raw materials into higher-value components and assembling modules and systems to build goods. To create profit, essentially companies must do this without incurring a higher cost than the difference between the price paid for the materials and that paid by customers to obtain the goods [2].

The price of products is externally determined by the market:

- There is a price that individuals will pay for the type of product and basic functionality
- A premium may be achieved if product features extend this based on greater functionality, or potential clients have a subjective desire to own a brand.

Companies have the ability to affect the costs incurred by optimising the structure and processes to achieve most efficiently the goal of providing goods at a reasonable profit.

The River Rouge plant was based on Ford's manufacturing system. Economies-of-scale were created by vertically integrating their supply chain infrastructure. The company owned most of the required facilities and plant within the supply chain to mass-produce Ford branded goods. Mass production relies on spreading the set-up cost over a production run to produce stocks and work in progress in the most economic batch sizes rather than concentrating on the economics of the production system and processes themselves. Goods and services not directly made by the vertically integrated organisation typically were bought on a commercial basis using adversarial purchasing practices to leverage down the unit price.

In the 1990s, the rationale behind vertically integrated supply chains to achieve economies of scale has been challenged in Western society by partnership sourcing [3], the lean production concept [4], activity based costing [5], and economies-of-scope that are based on product family agility and variant flexibility [6]. Lean manufacturers form relationships with partner companies and optimise supply chains by minimising non-value-added waste.

Typically the final assembler, or a strategic partner, synchronises production of components and modules within the network of associated companies.

Japanese supply chains, using the Toyota production system [7], pioneered systematic and continuous waste eradication in manufacturing. Relationships between Toyota and its suppliers, according to Cusumano [8] initially were based on indebtedness and obligation. Miyashita and Russell [9] asserted that psychological relationships are a founding principle upon which the keiretsu were sustained and maintained their links. The combination of obligation, motivation, and competitive pressure serve to motivate the clusters of organisations. Miyashita and Russell also examined six keiretsu that co-ordinate more than 85% of the publicly listed companies in Japan [10]. Examples and definition of keiretsu are given in appendix 1. The six Japanese keiretsu are Mitsubishi, Mitsui, Sumitomo, Fuyo, Sanwa and DKB (First National Bank). Miyashita and Russell further establish that each company in the keiretsu held a small equity stake in the other businesses within the network. Korean industry is structured in a similar manner with four chaebol: Hyundai, Daewoo, Samsung and Lucky Goldstar Electronics.

The keiretsu model lies between the pure vertical integration of Fordist mass producers and the adversarial approach of competitive purchasing relations between non-equity-linked customers and suppliers. American and other Western corporations are reported to use the keiretsu concept [11, 12]. The concept does have its limitations, however, as Japanese corporations have been allowed to collapse, and there are reports of keiretsu in difficulties [13].

Virtual vertical integration is derived from the keiretsu system. Virtual networks of companies group together in ad hoc clusters to fulfil the requirement for the production of various products on a project basis. The period that individual companies remain part of a virtual enterprise is largely dependent on that company's relative performance and

improvements in manufacturing, managing the logistics flow, and the rate and quality of its design innovation.

During the 1980s and 90s, companies in the West made progress toward focusing on core competencies [14]. As a consequence, leading manufacturing companies abandoned the traditional concepts of attempting all design, manufacturing and distribution activities for their product. The result is that firms now emphasise two operational strategies:

- 1) Focusing on in-house core competencies to maximise return on capital and
- 2) The purchasing role in facilitating and co-ordinating activities undertaken by other focused enterprises.

Therefore facilitating task is the selection and development of suppliers for non-core value-adding activities that the company does not wish to retain in-house.

Assemblers' facilities, in the 1990s, typically accounted for less than 50% of the value added in producing most consumer goods. Lysons [15] quoted a survey of 1000 UK companies that indicates the mean product cost breakdown was 39% in-house value adding and 61% expenditure on acquiring materials. It is accepted that the range for purchasing expenditure as a percentage of total product cost can be as low as 25% for service oriented companies and as high as 95% for electronics surface mount sub-contractors [16] although the majority range between 60 to 85%. Consensus is that the percentage of outsourced value-add generally is increasing as a result of pressure to become more competitive [17]. Simultaneously, assemblers are attempting to reduce their supply base. This increases the time available to develop relationships with suppliers with the ultimate goal of improving the performance metrics for quality, cost, delivery reliability, design cycle time and management.

Outsourcing [18] as a concept is in line with Adam Smith's 'division of labour' [19]. This strategy increases the reliance of a business on its suppliers as progressively more value-adding is outsourced to a smaller supplier base. As a result, in Western societies the

advocated model of industrial manufacturing changed significantly from adversarial price-based transactions to one of holistic supply performance incorporating non-financial metrics.

The on-going nature of business, compounded by the ability to catch up, suggests that:

- There is no single company, supply chain or technology that will be an outright winner, and that
- Any advantage(s) gained over competitors will be fleetingly short as commercial entities learn to embrace change.

The challenge that has spread to face all business sectors is how rapidly to achieve superior results and stay ahead of, or sufficiently differentiated from, the competition for sustained periods of time [20]. This has significant potential impact on the people side of the business including communication and efficiency [21], unionisation [22], skill acquisition [23, 24, 25] conflict management [26], career development [27] and inter-organisational training programmes.

## **1.4 Sources of Competitive Advantage**

Porter suggests the basis of competitive advantage is the value a company provides its customers [28]. He further proposes [29] a biguous choice between cost or differentiation, and between a narrow or broad focus to achieve competitive advantage. The lower-cost producer creates an advantage over competitors if the customer perceives the product or service as comparable. Differentiation relies on creating truly unique attributes. The narrow manufacturer achieves success by focusing exclusively on market segment specific requirements. Porter [30] also describes the changes in emphasis Japanese vehicle assemblers made:

They initially penetrated foreign markets with inexpensive compact cars of adequate quality, and competed on the basis of lower labour costs. Even while their labour-cost advantage persisted, however, the Japanese companies were upgrading. They invested aggressively to build modern process

technology, pioneering just-in-time production and a host of other quality and productivity practices. This led to better product quality, repair records, and customer satisfaction ratings than foreign rivals. Most recently, Japanese automakers have advanced to the vanguard of product technology and are introducing new, premium brand names.

Core to this rapid transformation has been "the willingness to abandon what has long been successful - is found in all successful companies, not only those in Japan" [31]. Hammer recognised this in the phrase "don't automate, obliterate" [32].

Porter used the concept of *value chains* to separate customers', suppliers' and the company's functions that impact the total competitive advantage of a company. Competitive advantage nominally is judged solely on potential customer's perceived value of a company's products and services, and their preference repeatedly to choose those. In effect, consumers buy products they consider subjectively best fulfil their needs.

Businesses have sought competitive advantage internally within their business activities, externally at competitors and suppliers, and by fulfilling customers' requirements. Various approaches to achieve competitive advantage include:

- Division of labour and industrial engineering to increase productivity, [33]
- Price based purchasing, [34]
- Market driven sales price used as a governor for manufacturing and distribution costs.
- Cost based purchasing, and an emphasis on total acquisition costing [35, 36, 37].
- Outsourcing production of mature and end-of-life products in order to focus on higher-margin new product development and launches, [38].
- Just-in-time manufacturing and delivery to create low transportation and stock costs using smaller batch sizes, more frequent deliveries of made-to-order goods and reduced production lead times. Stable processes to manufacture high quality components are a requisite of just-in-time manufacturing. Quality was perceived as a strategic advantage Japan had over Western industry during the 1980s and 90s. [39, 40, 41]
- Creating broadly aesthetically appealing product designs, and releasing frequent variants as a result of concurrent engineering.
- Creating greater product and process availability, [42, 43]
- Integrating other products in co-assembled multifunctional consumer goods, [44]
- Creating low volumes based on a backlog of orders of products [45].
- Focusing on calibrated and tested products set up to exact customer requirements [46, 47].

- Focusing on products with performance that is based on calculated nominal response, where the processes are standardised and controlled by statistical sampling [48].
- Creating high volumes of low-cost, high quality, standardised products for export or setting up transplant operations in the target region [49].
- Creating networks of businesses based on partnership sourcing principles to reduce transaction costs [50].

Hayes and Wheelwright [51] identify cost, price, reliability, performance, dependability, "peace of mind", service and flexibility as being enduring priority sources of competitive advantage.

Christopher [52] states "competitive advantage is increasingly a function of supply chain efficiency and effectiveness ... the greater the collaboration, at all levels, between supplier and customer, the greater the likelihood that an advantage can be gained." Leading businesses apply techniques and lessons learned internally up their supply chains to suppliers and downstream through distribution channels. Competitive advantage in this context is achieved through manufacturing based on chains of enterprises focusing on continuously improving the rate at which costs are reduced while quality and value added rises.

The effectiveness with which the Japanese adapted techniques and lessons learned up and down supply chains in Japan became a significant source of competitive advantage. Transplant assembly facilities and subcontractors in the West later made similar improvements. This implies that the performance standards achieved are not entirely related to a mono-cultured society that Japan largely represents.

Techniques and practices to improve supply chain efficiency have been largely explored and adopted across manufacturing industries. It is likely that leading firms will need to monitor continuously their environments to identify new requirements, approaches and techniques in order to remain competitive. Rhodes highlights possibilities associated with alternative forms of response that could develop to create competitive advantage:

"Tomorrow's world will be different. It will not consist of high-tech ways of doing things we do in a low-tech way today. It will consist of an entirely new set of more-or-less compatible businesses and institutions, which variously compete and collaborate in a largely unmanaged, uncontrolled search for new ways of doing things. We and our organisations are engaged in an evolutionary process. If we know the outcome we would know the future; something we generally agree is impossible. It is thus imperative that we pay attention to where we are, what others are doing and, via the best strategic thinking we can muster, where we might go.

Strategic awareness is crucial. When a significant change occurs somewhere around the globe, be it in manufacturing or wherever, we ought to know about it and be ready for it" [53].

Awareness of the environment is considered a pre-requisite to world-class performance for the various criteria used to assess competitiveness.

## **1.5 World Class**

Hayes and Wheelwright [54] used the term "World-class manufacturing" (WCM) to express the competitive advantage achieved by leading manufacturing organisations.

Drivers of competition and critical practices necessary to fulfil the drivers that are used by world class manufacturers include:

- Workforce development,
- Development of technically competent management
- Competing through quality processes to produce high-value products
- Maintaining and stimulating the participation of the workforce
- Investing in state-of-the-art equipment and facilities.

During the 1990s, while corporations have focused on their core competencies, networks of focused, flexible and responsive enterprises have become the core theme of organisational search for competitive advantage. To satisfy demand for consumer goods in the global market, multinational corporations produce in regionalised production facilities - transplants. A core attribute of globalisation is to strategically source components within the target market region, and sell excess capacity to other regions.

To be competitive, companies are striving to become and remain world-class [55]. There is general consensus on the necessity of Western manufacturing businesses to re-organise their



operations to compete on a global scale with world class competitors [56, 57, 58]. During the 1980s, many Western businesses sought competitive advantage through automation; for example the use of robotics reduced operating costs by cutting work force numbers. Rank Xerox is typical of companies that invested in automation, for example automated guided vehicles, to reduce direct labour [59]. This type of automation became less popular during the 1990s and was replaced by faster and more flexible driver operated machines.

Japanese manufacturers have a strong presence as world-class competitors for automotive and electronic goods sectors [60, 61, 62] and Schonberger [63] described competitive advantages being used by Japanese manufacturing enterprises.

Just-in-time (JIT) manufacturing is a disciplined approach to improve productivity and eliminate waste [64]. Toyota Motor Manufacturing developed the Toyota Production System [65] based on JIT principles, using kanban cards as cues to initiate manufacture of specified products in small batches. JIT is a demand-pull value-chain control and synchronisation technique that relies on a small backlog of orders. Emphasis is placed on control of work done, rather than the Western emphasis on simulation using manufacturing resource planning (MRP II) information tools.

The JIT concept, combined with workers at Toyota that "often worked one to two hours compulsory 'work to finish' overtime at the end of each shift" [66], served to increase plant utilisation to between 90 and 120 per cent of the plant's nominal capacity. This is in comparison to U.S. manufacturers that ranged between 60 and 90 percent [67].

## **1.6 Motorisation**

Motorisation is the stage in the industrial development of a country when the nation acquires its own capability to produce vehicles. Motorisation was used by a number of countries as a significant step toward becoming an industrialised society. Microelectronics has now made it

possible for third world countries to bypass historical manufacturing and management evolutionary processes. By adopting advanced technologies and manufacturing practices, economic regional power has shifted with the emergence of newly industrialised countries (NICs) [68]. Large international businesses have stimulated the industrialisation of low labour cost countries such as China, Mexico and the other Asian economies [69].

Older industrialised countries (OICs) have had to adapt to the new business conditions. The performance levels of supply chains in OICs have had to improve toward world-class levels to compete with newly industrialised countries.

New manufacturing technologies and planning techniques have led to reengineered processes. Out-of-date infrastructure may remain on the fixed asset list for considerable periods of time after becoming obsolete. These are theoretically relatively straightforward to 'obliterate' [70], re-organise, upgrade, or re-arrange. It is also necessary to change facilitating organisational structures and approaches that supported the obsolete processes [71]. This is challenging within any business organisation. Attempting significant improvements when the Target Elements are in other companies complicates the challenges. Since the 1960s, purchasing professionals have expanded their functions' scope to include the development of suppliers [72]. Since some modern business operations are carried out on a global scale, cultural obstacles and value-sets also have significant impact [73].

## **1.7 Justification of Hypothesis, Aim and Objectives**

The aim and objectives stated in figure 1.2 are a revision of those submitted with the registration, in 1993, of this research programme. The original aim was to identify lessons learnt from successful and representative supplier development and other improvement initiatives. These would thus be formalised as guidelines for further successful implementations by practitioners. This research, however, does not generate and propose

new guidelines. An alternate aim that more fully demonstrates the accomplishment of this research is:

- To investigate schemes and associated literature, with emphasis on supplier development, focused on the enhancement of supplier performance and clarify links to facilitating preparatory activities.

Objective 1 stems from the diverse sources and abundance of literature available for review. This research programme uses a literature review as a research technique, in order to identify data for triangulation between exploratory and validated research. It is necessary to categorise reading materials into various clusters including:

- Theoretical and exploratory
- Explicative
- Comparative discussions that create hypothetically driven conceptions of best practice based on challenge-able data
- Survey data and other result based predictive and imperative ‘calls to arms’ used to invoke or motivate responses, commitment and activity
- Case studies
- Prescriptive guidelines

Objective 2 focuses on identifying hybrids, variants and options in use, their causes and applications. This objective is the result of a synthesis of literature, focusing to clarify tacit assumptions upon which descriptions of scenarios are based. Given that comparative discussions provide extremes on various continuums, this objective serves to sub-divide the continuums in order to identify attributes and thus differentiate phases, for example of achievement.

Objective 3 puts emphasis on producing a model with options, applicable to a wide range of industries. The model is validated by research aimed at refining the original, which was undertaken with NP Ltd and companies in its supply chain.

The hypothesis of this research was identified, in 1994, as a result of emic and subsequent etic research into the blame culture within M E Ltd. The investigation is detailed in chapter 5 and appendix 1.

## **1.8 Summary**

Commercial relationships between industrial enterprises range from legalistic contracts through to strategic partnering based on technology and performance leadership. The relationships intangible aspects range from adversarialism through to trust and a social bond. Industry in the West is moving to emulate Japan's supply-chain performance by implementing a shift, from adversarial transactions based on price, toward the partnership-sourcing paradigm.

The contention of this research is that the explicit results of world-class, manifest themselves as improvements in the performance metrics focusing on quality, cost and delivery, are consequent effects of deeper, more tacit aspects of the relationship between:

- Goals and objectives,
- Agents of change – be they implementers or recipients and
- The modus operandi.

This research programme assesses the link between purchasing paradigms, organisational learning, learning organisations and change management from an holistic perspective [74].

## **Hypothesis**

The hypothesis of this research to be tested is that:

A preconditioning programme for supplier development and other improvement initiatives provides support for progressive organisations, irrespective of size or position in the supply chain.

## **Aim**

The revised aim of the project is:

To investigate schemes and associated literature, with emphasis on supplier development, focused on the enhancement of supplier performance and clarify links to facilitating preparatory activities.

## **Objectives**

Three objectives were identified in order to gauge progress in this research programme.

1. To recognise current methodologies by examining publications.
2. To identify hybrids, variants and options in use, their causes and applications across industries.
3. To produce a model with options, applicable to a wide range of industries, by refining the original model, adapted ideas, concepts and applications.

**Figure 1.2 - Research Hypothesis, Aims and Objectives**

## Chapter 2

### Research Methodology and Review of the Thesis

*The world is such-and-such or so-and-so only because we tell ourselves that that is the way it is*

Castaneda, C. (1972) *A separate reality: Further conversations with Don Juan*, Pocket Books, New York

#### 2.1 Introduction

The previous chapter enumerates the macro-environmental origins of this research programme and consequent research hypothesis, aims, and objectives presented in figure 1.2. This chapter outlines available methodologies, selection criteria and details methods used to achieve the results obtained. The chapter concludes with an holistic review of the thesis, stating for each chapter its contribution as foundation, or extension to the existing body of knowledge.

#### 2.2 Issues in Research Methodology Selection

Research aimed at resolution of challenges and situations divides into two primary classifications resulting from the overall objectives, sponsor's requirements and scope of the study:

- Elucidating theoretical questions and situational variables capable of wider generalisation
- Solving particular concrete problems likely to have a restricted range of applicability

These provide the context to identify specific research methods on a continuum ranging from pure inductive quantitative, systematic protocols of nomothetic methods, through subjective, qualitative accounts produced by ideographic techniques [75]. Approaches to the preparation of abstract concepts and generalisations, their structure, the nature of the data

reported and outcomes generated influence the propensity of the researcher's style, and hence the position of specific research methods used on such a continuum.

In figure 2.1, Gill [76] compares the stages of action research, consultancy and 'pure' research.

Stages	Action research	Consultancy	'Pure' research
Entry	Client or researcher presents problem. Mutually agreed goals	Client presents problems and defines goals	Client presents problem and defines goals
Contracting	Business and psychological contracting. Mutual control.	Business contract. Consultant controls client.	Researcher controls as expert. Keeps client happy. Minimal contracting.
Diagnosis	Joint diagnosis. Client data/researcher's concepts.	Consultant diagnosis. Often minimal. Sells package.	Researcher carries out expert diagnosis. Client provides data.
Action	Feedback. Dissonance. Joint action plan. Client action with support. Published.	Consultant prescribes action. Not published.	Report often designed to impress client with how much researcher has learned and how competent he or she is. Published.
Evaluation	New problems emerge. Recycles. Generalisations emerge.	Rarely undertaken by neutrals.	Rarely undertaken.
Withdrawal	Client self-supporting.	Client dependent.	Client dependent.

**Figure 2.1 Action research, consultancy and 'pure' research (Gill)**

### 2.2.1 Etic and Emic Research

Pike [77] provided the notion of emic and etic constructs when researching, theorising and categorising behaviour and other social dynamics. Berry [78] elaborated these and the terms closely are associated with his work. Etic constructs are thought to apply universally to all human behaviour or thought. Emic constructs are peculiar to one culture or group. For this thesis, emic research provided the hypothesis as a result of open-question examination techniques. To provide confidence in the proposal, etic research validated the hypothesis by

subjecting it to scenarios that test the robustness of the construct by exposing limitations and failures.

For psychologists, Coolican [79] provides definitions for etic and emic thus:

- Etic – (a) universal ... construct, applicable to all cultures,
- Emic – (a) construct applicable within one or only a few cultures.

British society is composed of many identifiable cultures including Afro-Caribbean, Indian (several separable cultures), North African and Persian, Pakistani, Scots (highland and lowland), Irish (loyalist and republican), Welsh (north and south), Geordie, Liverpudlian, Cornish, to name a few. The key attribute that makes frameworks etic is their universality since they focus on continuums that cross, encompass, or operate remotely from, culturally specific perceptions.

For research by managers, Gill and Johnson [80] define etic and emic research thus:

- Emic – A form of explanation of a situation or events that relies upon elucidation of actor's internal logics or subjectivity.
- Etic – A form of analysis relying upon explanations that impose an external logic or frame of reference upon subjects so as to explain their behaviour.

Etic research seeks to impose categorising reference frameworks to explain participant behaviour. In effect, a typology is required that subsequently can be used for statistical analysis and comparison. Examples of etic instruments include:

- 1) automotive assembler's instruments to audit suppliers,
- 2) Kolb's learning cycle [81] that segments the process of theory construction into both inductive and deductive approaches,
- 3) Belbin's [82, 83] team roles, and
- 4) the Myers-Briggs' type indicator based on work by the apparently racist Carl Jung [84, 85], and Honey and Mumford's learning style categories [86].

Honey and Mumford etically use a forced compliance questionnaire instrument to categorise participants by approximating their preferred learning style into four styles: activist, reflector, theorist and pragmatist based loosely on Kolb's learning cycle.

Emic approaches focus on clarifying scenarios based on identifying participant's subjective internal logic, for example Schein's process consultation. Emic research workers accept that



qualitative descriptions are subject to hermeneutic circular effects based on interpretation of literary texts by grounded theoretical practices and meaningful human behaviour.

Observed and portrayed behaviour also can be a front due to indexical shifts to suit current scenarios. This front can have participants putting on an act, doing or saying what they think others want to see or hear.

Schein [87] identifies six attributes of process consultancy in a matrix format, shown in figure 2.2, that form the foci of observation and intervention during the interaction between individuals and subgroups. He also lists five attributes common to group's survival in its external environment:

- Defining the fundamental mission that justifies its existence - its primary task.
- Setting specific goals derived from the mission.
- Deciding what means to use to accomplish the goals.
- Measuring and monitoring whether or not goals are being accomplished.
- Getting back on course by fixing problems once they are identified (when the group discovers it is off target or not accomplishing its goals) - any group or organisation has to be able to regularise remedial and corrective processes and thus make them part of the structure of the group [88].

	<b>Task</b>	<b>Interpersonal</b>
<b>Content</b>	1. Formal agenda, goals	4. Who is doing what to whom
<b>Process</b>	2. How the task is done	5. How members relate to each other, communicate, etc.
<b>Structure</b>	3. Recurrent processes- "standard operating procedures"	6. Recurrent interpersonal relationships, roles

**Figure 2.2 Schein's Foci of Observation and Intervention**

Gill and Johnson [89] follow Burrell and Morgan's [90] contrast of nomothetic and ideographic emphasis in figure 2.3 below.

<b>Nomothetic methods emphasis</b>	<b>Ideographic methods emphasis</b>
1. Deductive	Vs Induction
2. Explanation via analysis of causal relations and explanation by covering-laws (etic).	Vs Explanation of subjective meaning systems and explanation by understanding (emic)
3. Generation and use of quantitative data.	Vs Generation and use of qualitative data
4. Use of various controls, physical or statistical, so as to allow the testing of hypotheses.	Vs Comment to research in everyday settings, to allow access to, and minimize reactivity among the subjects of research.
5. Highly structured research methodology to ensure replicability of 1, 2, 3, and 4.	Vs Minimum structure to ensure 2, 3, and 4 (and as a result of 1).

**Figure 2.3 A Comparison of Nomothetic and Ideographic Methods**

Quantitative research is defined as a research process focused on mathematical or statistical testing of research hypothesis generalisations. [91]. Deductive research develops a conceptual or theoretical structure that is subsequently tested. Such research designs attempt to isolate the researcher from *a priori* defined causative sequences of independent, dependent and intervening or extraneous variables [92]. Total quality statistical measurement and analysis tools represent application of quantitative approaches to improve manufacturing key performance metrics.

This contrasts with the qualitative methods associated with understanding social issues and dynamics and human problems, based on the construction of a complex holistic model [93] that can oppose or by-pass systematic, and hence restrictive methods [94]. This is framed in the context of a detailed report of informants views, conducted in a natural setting, for example Watson [95]. Ideographic qualitative constructs examine research targets at empiricist and epiphenomenal levels; empiricism is based on the concept that knowledge is

valid if derived directly and *a posteriori* from sense-data and experience, while epiphenomenon are secondary constructs rather than integral to an organism's functioning [96]. *A posteriori* examinations have the advantage of hindsight and actual results generated when forensically examining conditions. Principal disadvantages are that with the passage of time, perceptions tend to become elaborated with successive recounting and accounts of reality distort, become filtered, standardised into corporate mythology, constructed to save face, integrating non-involved persons by association to gain credibility, or factual evidence becomes omitted.

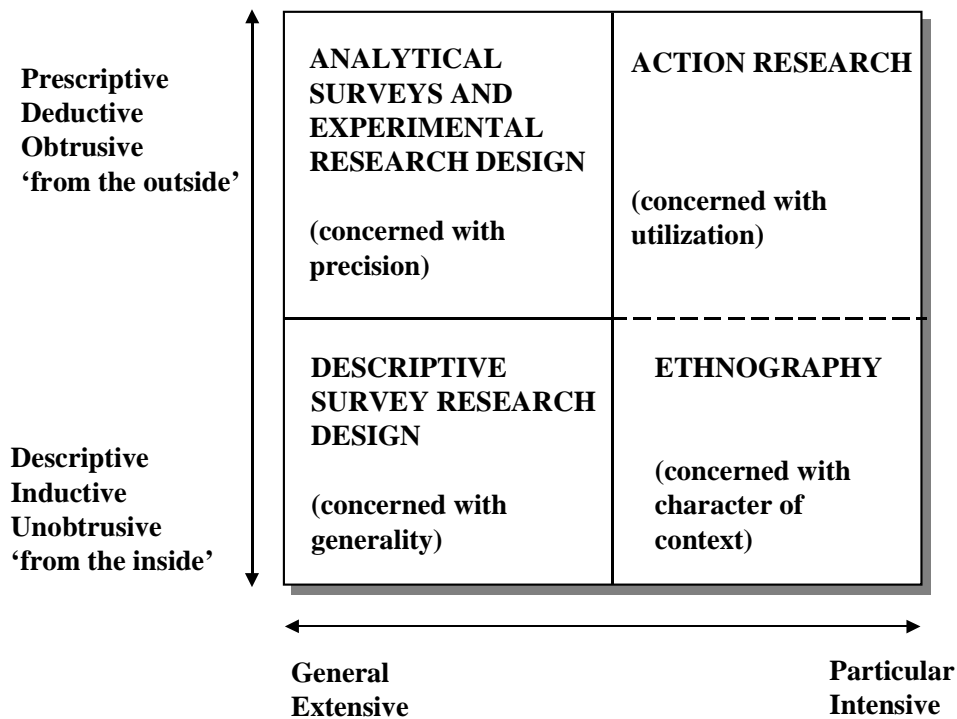
Survey methods used in data collection are divisible into analytic and descriptive categorises. Analytic methods focus on the identification of independent, dependent and external variables and can be contrasted to the descriptive method of identifying the presence, extent and variants of examined phenomena. Survey based methodologies have specific limitations including:

- Masking fundamental cause and effect relationships between variables as a result of interpretative survey bias; and
- The process of aggregation restricts the application of the information in defined scenarios.

Bryman [97] suggested the difference between the quantitative and qualitative paradigms is based on a convention neither relating to practice nor methods of data collection. The underlying hypothesis is that research designs can be biguously selected either from pure qualitative or quantitative research paradigms. Biguity retains advantages and disadvantages of the research paradigm selected due to the degree of match or mismatch between methods and the environment within which it is used [98].

Alternatively research programs are hybrids, created by selecting tools and techniques from both disciplines to suit the problem rather than the pure paradigm, with the consequence of more rounded research worker skills. Gill and Johnson [99] identify four macro-level research approaches based on a two by two matrix illustrated in figure 2.4. These

approaches subcategorise hybrid research, though the boundaries are arbitrary and allow for transfer and some attribute commonality. Organisational research-bias and research worker's training and ability to apply techniques are two limiting influences.



**Figure 2.4 – Gill and Johnson’s Framework of Research Methods**

### 2.2.2 Method Deficiencies and Triangulation

Shikanai [100] found Japanese college students that succeeded attributed this to easy tasks, when failing to their own inability. Hess et al [101] found Japanese mothers provided the same result, and compared this to American mothers whom showed pride in the individual when succeeding and searched for justifications by insinuating there was something wrong with the college or teaching methods when failing. Coolican [102] suggests such ethnocentric research activities can lack universal validity due to the value judgements associated with cultural differences, particularly if they are perceived from a particular regional norm. He states:

“An example of ethnocentrism is to describe eating with fingers as ‘dirty’ or rubbing noses in greeting as ‘funny’. North Europeans, who generally greet with a firm handshake and full eye contact, tend to describe many Asian cultures’ greetings,

which involve a bowed head and no eye contact, as ‘deferential’ or as exhibiting a ‘shy’ cultural personality. This is an ethnocentric description filtered through a cultural perspective but it carries the unspoken implication that the interpretations are somehow true, and that North European greetings are the neutral basis from which to assess others.”

To overcome this type of bias, researchers from culture zones ‘A’ and ‘B’ should jointly prepare research devices and ensure the language used has translation equality. It also is interesting to note Coolican uses the terms interpretations, culture and perspective in the quoted passage. In learning situations such as that described and in the case of supplier development that is the focus of this research programme, concern for universal validity contributed to motivation that led to the creation of the interpretations matrix.

McGrath [103] asserts there is only a series of compromises when selecting research methods, and there is no single all-purpose solution. Since no one research method can provide a full spectrum of validity the framework of any research project must balance the deficiencies of one method with the benefits of a joint approach. Kane [104] sponsors this underlying principle of blending methods aimed at confirming, extending or validating results. Kane recommends the use of multiple methods to triangulate complementary perspectives with quantitative measurement viewing the overlap of qualitative data. Triangulation in this thesis was achieved by using different research approaches in the study of preconditioning prior to customer driven formal improvement initiative implementations.

Approaches used were:

- Collection and analysis of prescriptive change initiative data from different intellectual focuses (supplier development, reengineering, benchmarking, organisational learning, and total quality);
- Collection and analysis of case histories and companies initiative participation promotional data.
- Company specific employee survey and a series of in-depth process consultative interviews. This work is the basis of appendix 1 and chapter 5.
- Development of Excel based quantitative tools for 1) stockholding cost evaluation for supply chain scenarios, 2) process cost of quality and 3) part availability.
- Involvement as a Target for cognitive behavioural modification [105] based on etic preference identifying assessments, paradigm focused seminars and workshops.

- Active research as a representative of a major fast moving consumer goods manufacturing corporation's supply chain management group involving work focused on designing products for logistics (DFL) and designing logistics chains (DOL). DFL work was based at a product development centre in the UK. DOL work involved visits to suppliers, assembly plants and a distribution centres in Eire, Japan, The Netherlands, Scandinavia and the UK. This work is the basis of chapter 6.

### **2.2.3 Information, Data and Intelligence**

Research, for example literature reviews, is the assimilation of knowledge. A telephone book is full of information. Researchers learn to seek relevant information – the data that represents facts that support or challenge arguments. Though books typically have a broad range of subject content, arguments they contain typically at least are two to three years old. More up to date data can be sought in journals and periodicals. What is critical to doctoral research is the application of intellectual rigour to understand, apply, synthesise, relate to other data and decide worth, impact and validity. Data without intelligent application and interpretation is simply knowledge – recallable trivia.

Researchers must define or categorise:

- 1) What data is known as fact-undeniable and
- 2) What is supposition or interpretation

This categorisation is imperative to the testability and credibility of research output since research output could be based on an interpretation of numerous iterations of interpretations. In effect this is interpretation pyramiding. The Interpretations Matrix identified as a data recording instrument was used to pyramid interpretations in order that participants can agree a consensus opinion of the current state – a current state analysis, and agree activities. This matrix is described in sections 4.14 and 4.15 of this thesis.

### **2.2.4 Triangulation of Interpretations**

Literature reviews attempt to systematically trace facts to their original source. Interpretive texts analyse existing literature sources. Researchers must distinguish between original contributions to knowledge, original models and subsequent interpretations and ancillary

arguments proposed by others. This process requires analytical application and an objective opinion as possible. Particularly for science and engineering research, subjectivity is not required and is actively avoided. Management and social research programmes may use subjective data recorded during interviews as the basis of formal objective hypothesis formulation to be tested in controlled conditions and using etic research instruments.

### **2.2.5 Field Study**

Field studies search for empirical data by direct observation of participants undertaking activities in the scenario setting. Field inquiry requests answers to questions asked to participants about those activities, including participants' perceptions, feelings and observations. Group relationships provide recognisable indicators in identifying process and information flows. They include organisation, hierarchy, formal and informal links, i.e. interactions among groups and sub-groups and reporting relationships [106]. Field study can directly observe artefacts and outcroppings. Artefacts are the physical attributes of a site. Outcroppings are noticeable physical traits that mark or characterise the site being observed which are aesthetic elements of the environment. Outcroppings relate to more subtle attitudes and behaviour stemming from status symbols, roles and relationships that are not immediately obvious that require clarification.

Inductive investigations evaluating initiatives prior to, during and after initiatives undertaken within limited societal systems are quasi-experimental attempts to reproduce as closely as feasible logic used in true laboratory experiments in natural, field, settings. Action research is a significant variant of the quasi-experiment used in social science, which provides the research approaches within the context for managerial and group dynamics [107]. A drawback to action research is the need to have access to relevant parts of organisations that demonstrate, or are identified as having, attributes relevant to the research subject.

Whilst undertaking action research, interactions between researcher and subject are virtually unlimited. This can be contrasted with the static approach of desk research, surveys, reflective observations and experiments under laboratory conditions [108].

The researcher's style can influence the subject's role by an indexical shift in their trust, access provided and the amount of elaboration when relaying information. Gibb [109] contrasted five supportive versus threatening climates likely to impact inter-personal relationships:

- *Evaluative versus descriptive*: A listener who perceives a statement as evaluative is put on guard. If, on the other hand, the comment is perceived as descriptive and factual, the receiver is more likely to accept the communication.
- *Control versus problem orientation*: One person's attempt to control another increases the latter's defensiveness. Problem orientation, by contrast, is supportive, because it does not imply that the receiver is somehow inferior.
- *Strategy versus spontaneity*: Strategy implies manipulation, whereas spontaneity reduces defensive behaviour.
- *Superiority versus equality*: To the extent that a person assumes a superior role, he or she arouses defensiveness in the other person. Equality is much more likely to result in joint problem solving.
- *Certainty versus provisionalism*: The more dogmatic a person is, the more defensiveness will be aroused in others. Provisionalism, on the other hand, allows the other person to have some control over the situation and increases the likelihood of collaboration.

Awareness of these climates, in conjunction with activities to increase explicit knowledge through shared awareness between individual and group [110] can have significant impact on intra- and inter-group dynamics [111].

### **2.2.6 Summary**

In summary, research programmes comprised of only method used in isolation are limited in focus, scope and ability to meet all requirements of validity and confirmation. To overcome limitations each approach has, triangulation is required between distinct methods and paradigms. Emic research has the potential to create hypotheses; etic research provides universally applicable test instruments and testable frameworks. Interactions between researcher and researched can impact on results.



## **2.3 Research Methodology Selection**

### **2.3.1 Matching Objectives to Methods**

The objectives of this research programme outlined in figure 1.2 are defined as:

- To recognise current methodologies by examining publications.
- To identify hybrids, variants and options in use, their causes and applications across industries.
- To produce a model with options, applicable to a wide range of industries, by refining the original model, adapted ideas, concepts and applications.

The underlying primary aim of the research programme that would contribute to original knowledge is to establish whether a preconditioning programme for supplier development would assist inter- and intra-company dynamics to best serve end customer's requirements.

Prior to investigation of this aim it was deemed necessary to review:

- The nature of adversarial and partnership sourcing management practices; and
- The benefits, limitations, scope and impeding elements of existing improvement initiatives applicable to manufacturing companies.

The research area investigated required a review of published literature to establish the state of current knowledge and projects undertaken. The principal literature survey objectives are:

- To compare critically, contrast and appraise published knowledge of inter- and intra-organisational change initiatives within a manufacturing context; and
- To establish a sufficient database and knowledge set of the principal techniques and reported applications for subsequent work during later stages of the research programme.

### **2.3.2 Initial Interview Series**

A series of semi-structured interviews were conducted in public venues and at corporate sites. Interviews were audio recorded where permission had been sought in advance. Access was gained to audio-recorded interviews conducted by other researchers. For emic interviews conducted 'off the record', notes were made after the interview was complete. Each encounter took place with senior executive personnel within a number of manufacturing organisations. The aim was to understand management' theories-in-use and espoused theories regarding successful application of business to business (B2B)

improvement initiatives. These built on the early phases of a literature review undertaken over the extended period of this research work. This work provided a macro environmental background for action and participant research with the collaborating establishments, a set of information available for grounded theoretical review and resulted in three information flow models [112].

The development of theory surrounding the strategic position of supplier development is addressed by literature sources. In assessing the strategic challenges of the first collaborating establishment it was necessary to extend the knowledge formulated in the literature review by conducting an internal survey to gather feedback from staff and shop floor employees.

### **2.3.3 Company-Specific Survey**

A company-specific survey was undertaken to gather current state data and review the company against its customer's espoused theory. A performance gap became evident due to the employment of a theory-in-use based on a blame culture and indirect communication. The rectification or alteration of this scenario became the focus of a case history examined in chapter 5 and appendix 1 of this thesis.

The primary aim was to ascertain the demographic distribution, identify historical antagonisms, categorise current emotive perceptions, and assess the gap to the idealised corporate state of capabilities and performance. These requirements were met by a company specific descriptive survey. Feedback was provided to management and team leaders of the results of the analysis.

This survey negated potential bias in terms of ethnic variables inherent in comparing two or more organisations in the corporation by focusing exclusively on M E Ltd's operations in the UK. The benefits of this approach were considered to include:

- Creating statistically reliable quantitative data *a priori* to customer company's supplier development initiative implementation.

- Pre-existing self identified and assessed human issues from shop-floor staff analysed with reference to ideal responses and management perceptions of reality.
- Company specific implications based on the scenario were traceable to valid company related data sets; and
- Case study material usable by a general population based on the analysis providing a reportable historic context prior to customer's approach and joint initiative.

Taking account of survey methodology limitations, data generated from the survey of the first collaborating company was analysed to identify and subsequently extensively elaborate company specific tactical response options to opportunities and challenges.

A predominantly inductive approach to this research programme is justified firstly as a result of the close relationship between data collection and theory building [113] that suited inductively grounded explanation of social phenomenon. This relationship supports perceptions of relevance and feasibility to constructed theories [114]. Secondly, nomothetic imposition of external logic or frame of reference on Targets, to explain demonstrated behaviour, is inappropriate where the investigated phenomena possess subjective capabilities [115]. In that case explanations of a situation or event must be based upon the elucidation of internal logic or subjectivity and is best fulfilled by the use of ethnographic fieldwork [116], particularly when using ethnographic and active field research methods to explore managerial initiatives [117].

## **2.4 Statement of the Researcher's Involvement in the Research and Publications**

The author as a sole representative of Coventry University undertook all research outlined in this thesis with the collaborating companies. All publications reproduced in appendix 6 have been written by Newlands as lead author with exception of:

- 1) Sherwin, Newlands and Cotton (1995 a and b) where Sherwin was lead author, and
- 2) Southey and Newlands (1994) which was a significant elaboration by Newlands of a working paper by Southey.

## **2.5 Personal Role in Research with Collaborating Organisations**

The general aim of the research programme is based on evaluating inter- and intra-organisational strategic change processes. This can be regarded as an investigation of social dynamics within the context of a limited society formed by the investigated organisations.

Two action research projects involved the researcher interacting with a collaborating company over periods of seventeen and eighteen months respectively. Four other research projects were based on contact durations of up to one week, working on behalf of the second project collaborating establishment.

The prior knowledge gained from the literature, survey and semi-structured interviews, facilitated the investigation of concepts under review and implemented using client data. The interactive nature of the action research programme led to the identification of hard and soft issues associated with the approach taken by individuals in their relationships with others.

Due to the on-going and multiple location nature of the work, some portions of the research were based on analysis and recommendations provided to key participants based on frequently updated descriptions of their situations. This effectively became implementation by *remote control*. This liberated time enabling simultaneously to develop plausible solutions for the participants, assess likely responses by the scenario's other key players and implement agreed action plans. This approach avoided a supervisory perspective and promoted a friendly old sage or honest broker image. It also allowed the participants to go about their business with an agenda, though without the Source of the initiative being present and causing resistance as a result of intimidation or fear.

A holistic research programme with M E Ltd consisting of a literature survey, multiple semi-structured interviews and a collaborative action research project of seventeen months duration was deemed sufficient to generate a research theory capable of a degree of generalisation. This was applied during work with the second collaborating establishment, NP Ltd.

Exit strategies were consistently proposed based on ending each action research project with the resolution of the requirement or situation and the customer/supplier relationship becoming self-supporting. In the second collaborating establishment, NP Ltd, although solutions had been enacted, quartile changes to product roadmaps based on market shifts impacted the solidity of the created relationships by refocusing product development programmes' efforts to alternate materials and technologies.

In summary the research methodology designed to achieve the aims and objectives of this research programme defined in figure 1.2 was:

- Exploratory qualitative assessment based on grounded theoretical research practices to conduct and analyse semi-structured interviews focused on business process change practices and the relationship between customer and supplier participants. This series of interviews aimed to identify strategic industrial dynamics.
- Qualitative data collection via semi-structured interviews with M E Ltd. This series served to identify internal dynamics operating in the company.
- Validatory research with NP Ltd that tests a model.
- A survey-based assessment of individuals' values and perspectives was undertaken within an organisation. The survey was analysed using quantitative and qualitative techniques. Statistical methods were deemed inappropriate. Data was collated to produce graphs to represent the current state. Grounded theory was used to identify significant and repeating themes underlying the statements made by employees. The analysis was openly reported to M E management, supervisors and shop floor employees.
- Action research using Schein's principles of process consultation to resolve identified challenges.
- Qualitative analysis of literature sources to identify potential causes and effects, to ascertain the theoretically-viable correlation between theory-in-use and low rate of supplier development initiative adoption by suppliers
- A qualitative appraisal of participant's requirements specifying quantitative simulations. Creation of the requested quantitative simulations and review sessions that focused on significance of the data and implications for design of logistics and consequently supplier selection and development.
- Action research, with the role of logistics project leader, working with NP Ltd's product development team members and a supplier management interface scenario. The psychological contract in this role was based on being on secondment from manufacturing in order to review and advise on all aspects of product development.
- Generalisation. Generating a more generalised, substantive and formal theory from specific local theory (substantive); and
- Evaluation of Results.

## **2.5 Review of the Thesis**

The primary aim of this thesis is to enable the research programme to be evaluated. This can be split into two sub objectives:

- Examination of significance and validity; and
- Fulfilment of the research aims and objectives (figure 1.2).

The thesis provides detailed analysis and critical appraisal of the theory and application of supplier development within the context of manufacturing supply chains.

The structure of the thesis can be divided into four main subsections that constitute:

- The research methodology
- A critical literature review
- The application of theory and development of knowledge
- Evaluation and discussion of the research programme

This thesis is the culmination of a research programme that has evolved over a number of years. Individual chapters of this thesis can be read independently. The nature of this research programme, however, advances incrementally from chapter to chapter, to add to the developing argument. The holistic nature of the work requires that in evaluating any contribution to theory the whole thesis must be considered. The holistic view required is provided below via a summary of the developing arguments within each chapter.

### **Chapter 1 - The Origins of the Project**

Networks of lean manufacturers have challenged the economic arguments that justified vertical integration.

The competitive environment of British manufacturing has significantly changed during the past two decades. This is in part due to increased focus on core competencies that form the basis of competitive advantage. Relationship dynamics between business enterprises have started to change from adversarial or legalistic contracts toward partnering based on trust, performance and technology leadership. Facilitating this change is a core competence.

## **Chapter 2 - Research Methodology and Review of the Thesis**

The selection of research methodologies represents a compromise between given strengths and weaknesses of each method.

A triangulation methodology can be adopted to select research methods such that weaknesses in one method can be offset by the strengths in others.

Evaluation of the current theory and knowledge of supplier development and prescriptive change initiatives shall be undertaken by a literature review and company survey.

Application of theoretical principles are investigated and participant observer action research methodologies described. Methodologies are chosen to suit the research problem.

## **Chapter 3 – Maintaining and Improving Manufacturing for Competitive Advantage**

Manufacturing management methods have evolved from traditional Taylorist aims and objectives

Organisations are more inclusive of stakeholder objectives

A number of supply chain network solutions have been developed including supplier development, for which the purchasing company has the initiative.

Philanthropic attitudes are recognised as a key facilitator to enhance competitive advantage of networks of enterprises.

## **Chapter 4 - Supplier Development**

Supplier development models and inhibitors to implementation are identified. Supplier development models have focused on the activities undertaken by the purchasing staff.

Recruitment of suppliers to supplier development programmes is a significant challenge.

Training, development and facilitating are core concepts significantly omitted from conventional supplier development literature. Barrington's model is examined.

No single management system provides an holistic solution to modern market conditions.

### **Chapter 5 – Development Research with a Collaborating Company**

Internal dynamics of M E Ltd are identified.

An original internal survey is reviewed.

A new change programme was planned and implemented to develop the management infrastructure and alter the internal relationships as precursors to enhanced performance and formal supplier development programmes driven by the assembler.

Changes at M E Ltd were based on middle-up-down rather than top-down or bottom-up implementations.

Sources, Targets and Process are defined and a provisional matrix format model identified.

### **Chapter 6 – Validatory Research**

The interpretations matrix is used as the data recording instrument during the current state analysis of a fast moving consumer electronics goods manufacturer, aesthetic component suppliers and a distribution centre.

The matrix has been applied and found satisfactory within its scope as a tool for recording the current state as the basis of analysis. Additions are suggested.

Preconditioning is identified within a company, from a customer to its suppliers, and from suppliers to the customer.

The case data challenges the assumptions behind the hierarchical nature of Barrington's model.

### **Chapter 7 – Discussion**

The context and individual company requirements determine the type and extent of preconditioning.



A relationship between the stability of the product development roadmap and consequent supplier development activities is proposed.

## **2.7 Summary**

This research integrated methods to overcome deficiencies of any single method by balancing those with advantages of others used. This resulted in triangulation to support the validity and reliability of the work derived from an integrated and holistic research programme.

Chapters 1 and 2 of this thesis outline the foundation and reasoning underpinning the research investigation and the approaches applied through the programme. Chapter 3 details paradigm literature reviewed. Chapter 4 critically reviews supplier development, training and learning, facilitating and coaching literature and identifies existing literature that could be used to provide a more effective basis for these initiatives. Chapter 5 summarises process consultative research undertaken as part of the long-term collaborative venture with M E Ltd. Appendix 1 details these results via a company-specific survey. Chapter 6 details the application of knowledge by the researcher in scenarios driven by product development requirements at NP Ltd. The remaining chapters critically discuss the findings of the research and establish conclusions and recommendations for future work.

## Chapter 3

### Maintaining and Improving Manufacturing for Competitive Advantage

*I was a young man in years but I give you my word I was a great deal older than I am now, what with the worry, meanness, and contemptibleness of the whole damn thing. It's a horrid life for any man to live not being able to look any workman in the face without seeing hostility there, and a feeling that every man around you is your virtual enemy*

F.W. Taylor (1947)

#### 3.1 Introduction

This chapter draws from literature on value chains, quality, cost, delivery, design, management and supply chain management. This chapter outlines the macro level paradigms that have formed the basis of strategies to achieve competitive advantage by affecting inter- and intra-company structures. The chapter reviews relevant arguments proposed by practitioners and the academic community that form competitive axes by which businesses are compared. Philanthropic attitudes are identified as being import to the effectiveness of strategic improvement initiatives.

#### 3.2 Value Chains

Three similar value chain generic models have been identified. Porter developed a generic 'value chain' model [118], based on a business system concept developed by McKinsey & Company, that identified a company's basic direct and support activities. The model applies to a stand-alone company rather than a network of suppliers. Porter's model was built on the premise that there will be added value contributed to materials from left to right. By convention this reflects the flow of materials and goods from suppliers through to customers. The difference between total costs incurred and the price goods are sold to customers is

depicted as the net profit margin. Revenue is the amount buyers are willing to pay for a product or service. In this context, revenue represents value that is quantified by a price system. A business is profitable when there is a surplus of cash from its activities. This occurs when the value it creates exceeds the total cost incurred from performing all the firms operations and indirect activity charges necessary to bring the product into being [119] and to market them.

Lamming [120] interpreted Porter's value adding model as a series of distinct stages or steps rather than interdependent continuous flow processes that are undertaken concurrently.

Hines produced an integrated materials value pipeline model that removes the boundaries between processes and focuses perception upstream from demand to supply, right to left [121]. Based on the premise that companies exist to serve the needs of customers, Hines' model supports the perspective that supply chains ultimately must respond to customer demands. This argument proposes the rationale that assemblers are more sensitive to market requirements than upstream inbound supply chains and thus are in a position to lead the development of first and lower tier suppliers.

Hines' model attempts to avoid departmental and functional boundaries and focuses on team roles, co-operative planning and action by all the individuals involved in the network of businesses. The model depicts profit as a by-product of all the activities undertaken, rather than an end result. Primary and secondary activities are inverted in comparison to Porter's model. This is in line with two mental constructs: 1) the metaphor of an 'ice berg' that direct activities are more easily visible 'above the water line', 2) the philosophy that employees have two jobs. Firstly to undertake direct activities to add value to materials and goods required by customers. Secondly, to improve the job they do by undertaking work related studies, learning about improvement techniques and participating in improvement projects.

Peattie and Peattie [122] illustrated a model (figure 3.1), based on similar principles to Porter and Hines that concentrates on marketing activities toward customers. The model uses the same orientation as Porter. The satisfaction chain concept is reflected in the five rights of purchasing that are listed in section 3.6 of this thesis. Peatie and Peatie also model the impact product, price, place and promotion have on market share, and consequently on gross revenue opportunity.



**Figure 3.1 Peattie and Peattie's The Satisfaction Chain**

Value-chain analysis is one of three themes Shank and Govindarajan [123] hold as the basis for strategic cost management. They argued that strategic cost management concepts derive from an amalgamation of (1) value-chain analysis, (2) strategic positioning analysis and (3) cost driver analysis. Their value-chain concept highlights four cost control and profit improvement areas:

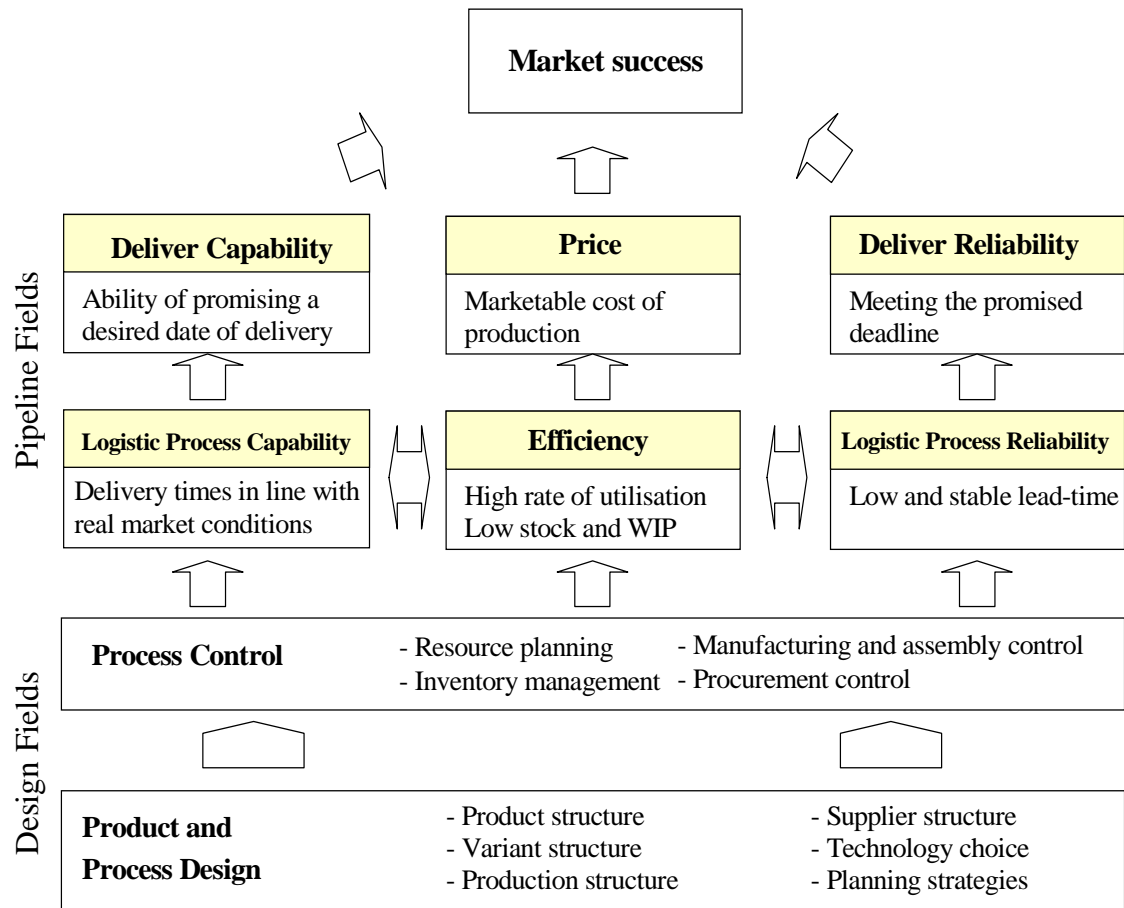
- 1) Links with suppliers
- 2) Links with customers
- 3) Process linkages within the value-chain of a business unit
- 4) Links across business unit value-chains within the firm.

Optimising customer and supplier linkages is core to optimise life cycle costs since this relates to the relationships between selling price and other costs incurred over the manufacturing life cycle and the working life of the product.

### **3.3 Supply Chain Competition**

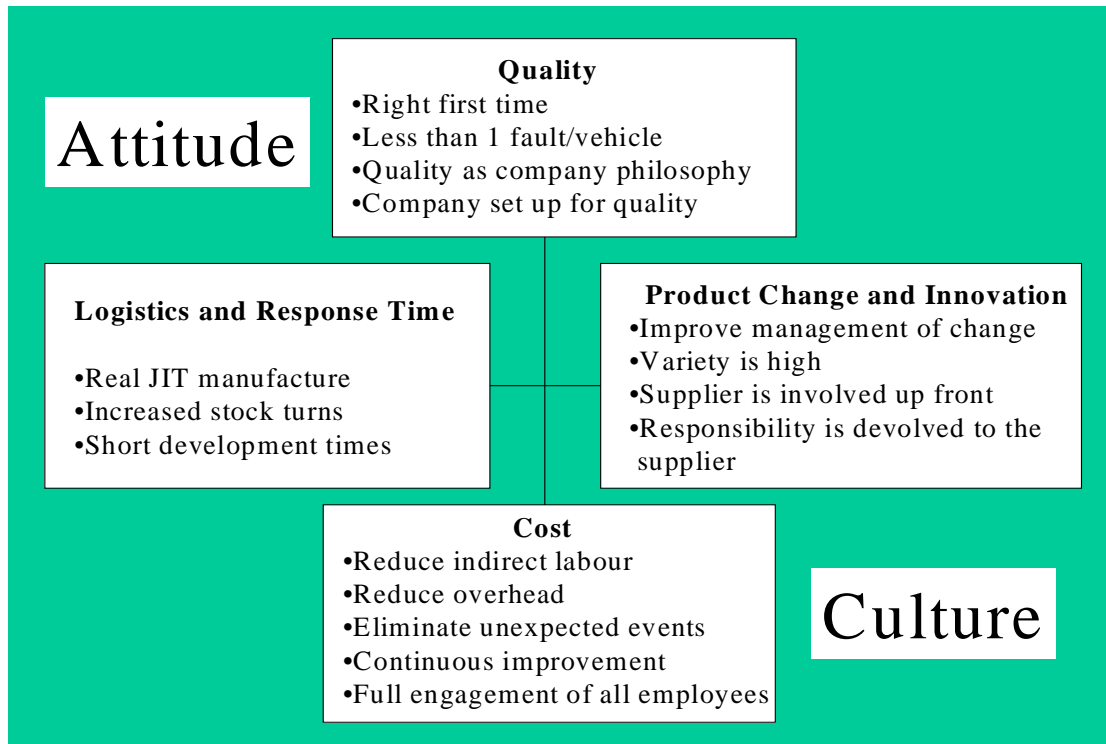
Supply chains are groups of companies linked together to service the tangible and intangible needs of the market. Competitive pressures recognised since the 1980s motivated companies to focus on their core competencies and outsource non-core services and manufacturing activities [124]. Perspectives of competition altered from company-versus-company in adversarial trading environments to supply chain versus supply chain, each competing to win a share of the global market.

Supply chain development has been practitioner led [125], particularly by automotive assembler companies in Japan, and subsequently in other regions [126]. O’Laughlin, Cooper and Cabocel [127] identified sources of competitive advantage from an holistic perspective, depicted in figure 3.2, based on product development and integrated order fulfilment processes.



**Figure 3.2 – Sources of Competitive Success (O’Laughlin et al)**

Application of the sources of competitive success model includes Warren's [128] model shown in figure 3.3. As a Production Purchasing Director, Warren highlighted that Rover Group recognised the need to improve and develop. The model identified that intangible attitudes and company culture form of the gestalt background for tangible metrics which are the primary benchmarks of competitive advantage.



**Figure 3.3. The Need for Change (Adapted from Warren)**

Watson suggests companies need an effective change strategy to avoid the danger of making existing strategies too rigid, which increases the predictability of business' responses and allows competitors to generate effective counter strategies [129].

### 3.4 Supply Chain Management

Products such as vehicles and computers are essentially sets of systems that have been integrated during brand name assembler's product development activities. In essence, such goods are co-packaged amalgamations of different technologies and modules produced by numerous companies other than the brand owner. Co-packaging of core technologies from different primary sources can add significant administrative costs and increase overheads to pay for the licensed manufacture of integrated goods. This is particularly important in electronics, where manufacture of wafers is carried out using semi-conductor technology from more than one vendor. Given significant proportions the values of finished consumer

durables are attributed to bought-in parts, assemblers have recognised the importance of strategic supply chain management and their role in developing suppliers.

Supply chain management (SCM) essentially is an integrating philosophy to perceive, organise and manage flows of information, materials and money from suppliers to ultimate customers through appropriate distribution channels. Goods flow from suppliers to manufacturers to distributors to retailers to final consumers, and in reverse for returned goods from consumers back to the manufacturer that may be faulty, end of life for recycling, refurbishment or repair. SCM philosophy is more generic and less broken down into its constituent elements than logistics management which U.S. literature considers services including providing transportation, warehousing, freight forwarding or inventory management to satisfy customers' predefined requirements. SCM, by contrast, strives to innovate continuously to create effective and efficient ways to manage and re-define supply chains to force out inefficiencies to create sustainable competitive advantage in the market [130].

### **3.4.1 Supply Chains – Vertical Integration and Partnering**

Vertical integration is normally defined in terms of ownership, where upstream suppliers and downstream business customers are owned by a dominant business, typified by a brand owner, the assembler or a holding company. While engaged in different types of activities, each business within a vertical supply chain typically contributes materials or processing capabilities to produce a common product. Vertical integration is strongly associated with mass production of low variety products, typified by Ford's Highland Park complex at the River Rouge plant that was the prototype of this manufacturing model.

Each part of the supply chain focuses on its 'core business', based on the principles of 'division of labour' [131] applied at individual employee and business levels. Conflicts can



develop as a result of ownership of different types of businesses that are fundamentally incompatible. A significant issue is associated with limiting purchasing of goods from 'internal suppliers'. Recognised phenomenon resulting from vertical integration are lack of competitive pressure reducing motivation to provide high quality goods and service classes, and increased direct costs due in part to a normalisation of wage rates [132].

Western businesses had a biguous choice - either vertically integrate or approach negotiations based on unit price. This latter approach is based on adversarial trading practices. Negotiations of this type stroked purchasing agent' and sales representative' ego states; purchasing achieved a reduction in expenditure and sales had formed a profitable contract, even though supplier's engineering activities might cut corners actually to achieve the profit. Lamming [133] states "in lean supply the short-term expedients of irrational action by the customers towards the suppliers makes no sense". By inference then, customers had acted irrationally when using the adversarial paradigm.

In this context centralised purchasing enables businesses to leverage bargaining ability to achieve economies of scale [134, 135] by:

- Consolidating quantities to obtain discounts or rebates
- Suppliers have the option of pursuing contracts for most or all of the business' specific requirements
- Supplier overheads therefore may be divided over longer production runs, thus reducing apportioned costs per unit, that allow the supplier to offer the customer a lower price or better service
- Purchasing staff can specialise by commodity or category
- Specialist ancillary staff positions may be justified
- Administrative costs may be reduced by processing fewer, larger value orders
- Information technology support can automate most clerical data manipulations.

The Japanese approach differed to these biguous paradigms, with government support that encouraged assemblers and suppliers to form long-term partnering relationships based on trust, information and commitment.

Cusumano [136] enumerated how Toyota avoided negative aspects of vertical integration by retaining commercial relationships with its suppliers based on keiretsu partnering

relationships. Dyer and Ouchi [137] are in agreement with Cusumano by recognising the costs of acquiring suppliers or customers by vertically integrating are more than the cost of partnering:

"The disadvantages of acquisition include: paying a 30 percent to 40 percent acquisition premium; a tendency toward increased wages in the acquired firm since the larger firm, which usually does the acquiring, typically pays higher wages that are then transferred to the acquired company; and a loss of market discipline because a captive customer reduces the supplier's incentive to innovate and continuously improve. Indeed, ... the Japanese partnership structure creates substantial incentives for firms to improve continuously".

### **3.5 Make or Buy Decision and Performance Management**

Purchasing as a function or set of activities exist as a result of conclusions to not produce in-house goods or services. This decision in part is based on cost considerations, where total cost of acquisition can be minimised by procuring goods and services at a lower cost from outside sources than would be incurred if they were provided in-house [138]. The performance leadership gap between the best and the rest [139, 140, 141, 142, 143] that became apparent during the 1980s and 90s has effected all departmental functions, and particularly purchasing [144] due to potential impact on bottom line profits [145, 146].

Progressive companies' decisions to make or buy product and component categories typically have been made at a board level. Dependent on the organisational structure, product development, BPR teams, operations or purchasing will be responsible for investigating whether making or buying given products better serves the business. Key attributes of the strategic decision to buy-in include:

- Business level Pareto analysis
- Generic value analysis
- Focus on the business operations core competence, that part of the company's activities that win it business. Order winning frequently is attributed to superior comparable criteria including: availability, quality, variety, frequent product introductions as a result of product development and design expertise.
- Lack of resources to make the product,

- A decision not to enter, or to exit established, low value add sectors,
- A decision not to grow the business in an uncontrolled or diversifying manner,
- The existence of strategically important partner firms that have provided adequate quality and sufficient volume. Such suppliers will likely invest in order to keep up with increased demand in line with the lead company's long range volume plans.
- Cost of product development can be reduced by co-operating with other manufacturers to co-develop technologies.

Marginal costing models are considered to be significant indicators of the viability to make products in-house [147]. This scenario assumes the company has sufficient technical capability and the plant is under utilised. Once the company has decided to buy-in goods, purchasing agents must select the most appropriate supplier from those the company is aware of [148], and agree how the two companies will interact to save costs [149, 150]. This level of purchasing tends not to perceive the business and the product life cycle holistically. Alternative cost models examine the total cost of ownership (TCO) [151, 152, 153], sensitivity (or gearing) analysis [154, 155] and Crosby breaks down costs into appraisal, failure prevention and of internal and external failures [156]. Internal failures include processing faulty goods, rework, delays, scrap, overtime payments to catch up lost production, additional resources to rectify problems. External failures include warranty cost, loss of reputation and sales, loss of sales due to lack of availability or reduced apparent capacity. From this perspective, faults in suppliers' processes would be classified as internal failures, from the perspective that end customers perceive the supply network is being an integral part of branded good manufacturers' organisations. To overcome this risk, employees at assembler and supplier facilities must be trained.

BS6143 parts 1 and 2 [157, 158], and subsequently Hines et al [159], highlight that eliminating the cost of rectification can provide significant returns on investment. Assessment of returns on investment is an integral part of supplier development processes. This inclusion in the process serves to reduce philanthropic attitudes. Purchasing or change agent's intentions of being benevolent contributors by generously providing training and

other improvement initiatives to suppliers can be challenged by a corporate emphasis on achieving by any means, fair or reprehensible, the corporate goal of performance improvement. Ford [160] subtly noted the importance of philanthropic attitudes within his vertically integrated infrastructure by stating “...poor management can waste labour and material and nullify the efforts of labour. Labour can nullify the results of good management. But in a partnership of skilled management and honest labour, it is the workman who makes high wages possible”. The quote by F.W. Taylor [161] in the box at the beginning of this chapter serves to remind change agents of the resistance and resentment that can be created by focusing exclusively on key performance indicators and ignoring the Targets of the change initiative.

Woodcock [162] focused on work place aesthetics and provides arithmetic models highlighting cost elements associated with informal training:

- Cost of wages of new operators during learning period
- Cost of scrap and rework during learning period
- Cost of supervisory time in training.
- Cost of lost production and wages of experienced operators involved in training.

To ensure expenditure on formal training courses is not wasted, Woodcock considers the following elements essential:

- Proper selection of trainees
- The appointment of suitable training staff,
- Setting-up a training area
- Devising effective training programmes.

These financial impact models do not take into account the possibility of changing the value of the products by producing possible variants, options and accessories dependent upon the product and market sector, e.g. automobiles, computers, domestic appliances.

Hoare [163] makes the assumption that the customer will accept all overhead increases; however Steele and Court [164] make a lowered estimate. Hoare does not take into account the potential to simultaneously reduce unit prices from suppliers due to an increased sales

turnover. Both analysis examples make the underlying assumption that each variable does not significantly affect the other variables. This assumption is not valid except at a most superficial level to show examples. Neither model includes costs of development, or intangibles such as 'off standard' (poor quality and performance) costs.

Deming's [165] point 6 promotes the institution of modern methods of training on the job. His point 13 recommends the institution of a vigorous education and self-improvement programmes.

Connected to Deming's points 6 and 13, Joiner states "money spent on training, retraining, and education does not show on the balance sheet; it does not increase the tangible net worth of a company. In contrast, money spent for equipment is on the balance sheet, and increases the present net worth of the company" [166]. No incurred expenses are estimated to achieve the percentage changes calculated by Hoare or Steele and Court. Neither the intellectual capital is quantified nor the effect that a change would or could happen once learning is undertaken and implemented. The Institute of Personnel and Development [167] clarify Joiner's point by categorising costs in terms of payback and pay-forward. Payback compares financial returns in comparison with alternative uses for the investment. Pay-forward derives benefit from cultural or behavioural change that does not lead directly to financially measurable business results, and increased employee association with the business and its objectives.

Morgan [168] highlights that up to 1997, purchasing interactions with the supply base focused on product quality and manufacturability, process design, skills development and training in a common set of techniques. Morgan suggests manufacturing industry will focus on skill development, documentation, cultural change, reorganisation and planning during the first decade in the twenty-first century.

### 3.6 Purchasing Perspective Shifts

Purchasing, like sales and marketing, operates at two levels [169]:

- Knowing the name of the Target (person or company) in advance that will be involved in the transaction; the goods in question will be created and delivered to fulfil the unique order requirements. The lead-time between order and delivery, or the frequency of orders placed, allow for the provision of significant variety and variability [170]. Typically, a make-to-order or assemble-to-order contract is established.
- Not knowing the name of the person or company in advance. As a consequence lower variety or a limited range of goods are provided usually on a make to stock basis.

Purchasing emphasis at its most tangible level is product centred purchasing that has the objectives: To obtain goods at:

1. The right quality
2. Arriving consistently on time
3. Delivered to the right location
4. In the right quantities and
5. At the right cost [171].

Stannack and Scheuing identify three further levels are defined to purchasing activities [172]. At a second level, buyers focus on process centred purchasing that emphasises the nature of the processes that provide goods and services to the customer company. The third level is 'relational purchasing'. This involves activities focusing on the exchange of a variety of "items" (including money, relationships, longer contracts, supplier development programmes and so forth,) for changes in behaviour, and improvements in quality, reliability, consistency and cost. The fourth level is performance centred purchasing, based on the exchange of items for performance - undertaking activities outside the remit of the customer's core activities. This fourth level corresponds to full outsourcing. These levels highlight purchasers' perspective shifts from tangible goods and services acquired, to the supplier's organisation, and subsequently to the more intangible performance advantages suppliers can create.

### **3.6.1 Adversarial Contracting**

Customers engaged in adversarial contracting encourage their suppliers to oppose their competitors to acquire contracts by cutting piece prices. Competition in effect becomes 'cut-throat' at a micro-economic level. In these scenarios suppliers may not make a profit on the initial quotation, though will chase every opportunity to increase the piece price based on complications due to customers' engineering change requests (ECRs). Simultaneously, any development work undertaken by the supplier will likely be financed as a non-recurring-expenditure (NRE), funded by the customer on a contract basis that is agreed in advance. Focus on low price and short term contracts is perceived either to reduce supplier's motivation, or as a hygiene factor, thus reducing the probability that the supplier will invest in capital equipment that reduces the unit cost of production.

### **3.6.2 Contracting During Product Development**

Secondly, product development is perceived as a strategic core competence [173, 174, 175]. Product development has evolved with the adoption of concurrent engineering, composed of five key elements in an industrial system: process, people, tools, structure and control [176]. Brookes and Backhouse [177] suggest efficiency, proficiency, radical innovation, incremental change and focus are key external driving forces acting to stimulate concurrent engineering.

Purchasing representatives working for product development programmes during concurrent engineering projects aim to provide a set of solutions for operations' purchasing. It is during this preparatory phase that purchasing negotiations typically take place for bespoke components and modules. As company specific items, the customer company has the strategic opportunity to single, sole, dual or multisource the goods required. This decision affects whether the supplier receives an order for all or a portion the goods for either a limited period or for the production lifetime of the product in operations.

Updated traditional purchasing literature [178, 179] augmented their consideration of adversarial trading and negotiation with scenarios between active buyers that gain control and passive sales representatives toward relationships.

### 3.6.3 Partnership Sourcing

Partnership sourcing [180, 181] or co-makship [182, 183, 184] became the alternative to adversarial trading, and is considered a more powerful paradigm [185]. The approach uses outsourcing for long-term service provision rather than merely a one-time acquisition of goods or services against a specification [186]. An updated traditional purchasing text [187] provides clarity on purchasing objectives:

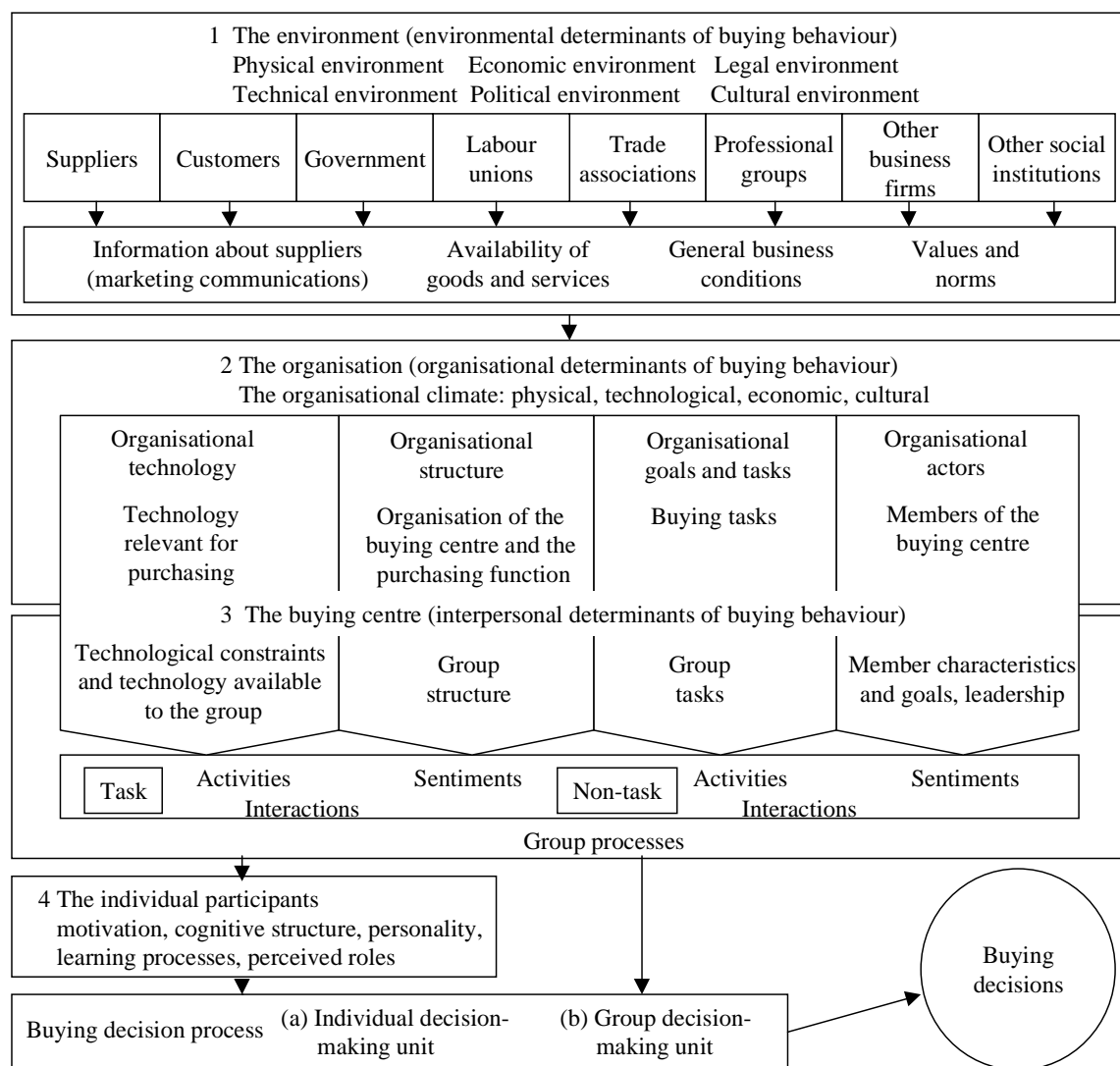
- To supply the organisation with a steady flow of materials and services to meet its needs.
- To ensure continuity of supply by maintaining effective relationships with existing sources of supply and by developing other sources either as alternatives or to meet emerging or planned needs.
- To buy efficiently and wisely, obtaining by ethical means the best value for every unit of currency spent.
- To maintain sound co-operative relationships with other departments (internal customers), providing information and advice as necessary to ensure the effective operation of the organisation as a whole.
- To develop staff, policies, procedures and organisation to ensure the achievement of these objectives.
- To select the best suppliers in the market.
- To help the effective development of new products
- To protect the organisation's cost structure
- To monitor supply market trends
- To negotiate effectively in order to work with suppliers who will seek mutual benefit through superior performance.

Webster and Wind [188] developed a model of organisational buyer behaviour, depicted in figure 3.4. They define four classes of variables that determine corporate buying behaviour as *individual*, *social*, *organisational*, and *environmental*; these are divided into task and non-task related dimensions, of which one is likely to dominate [189]. Argiris noted similar



effects when examining tacit defensive routines [190]. Webster and Winds' hierarchy is defined from macro to micro levels:

- Starting with environmental impact and external sources;
- Determining the organisational boundary defined by its technological, structural, and directional attributes that are formed by the principal participants;
- Focusing on functional activities and interpersonal determinants of behaviour;
- Task and none task (value adding and non-value-adding) activities, and
- Psycho-sociological determinants of individual behaviour that underpin the preferred styles of knowledge workers, and
- Individual or group [191, 192] decision making processes.

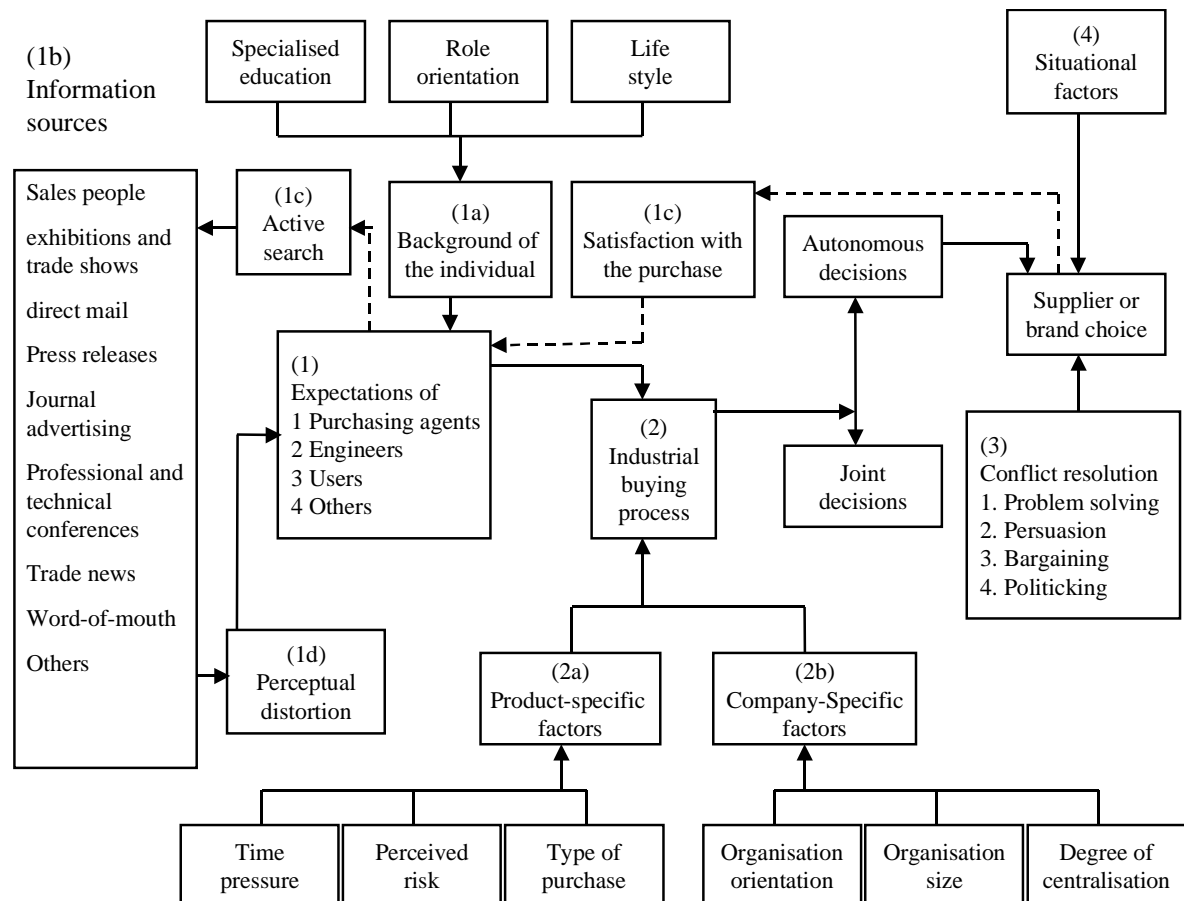


**Figure 3.4. The Webster and Wind model of Organisational Buyer Behaviour**

Webster and Wind's model creates a hierarchy of dependencies from various domains and impacts the company through controlling processes, the individual and the results of the

decision. They note "the buyer (or purchase agent) is in most cases the final decision maker and the target of influence attempts" and expand further by stating "It is the specific individual who is the target for marketing effort, not the abstract organisation".

Sheth [193] also developed a model of organisational buying behaviour, shown in figure 3.5. Sheth identifies information sources, experience, purchasing process, product development issues, conflict resolution processes and situational factors, and links them in a closed loop cycle that has functional similarity to the learning cycle by Kolb, Rubin and MacIntyre [194].

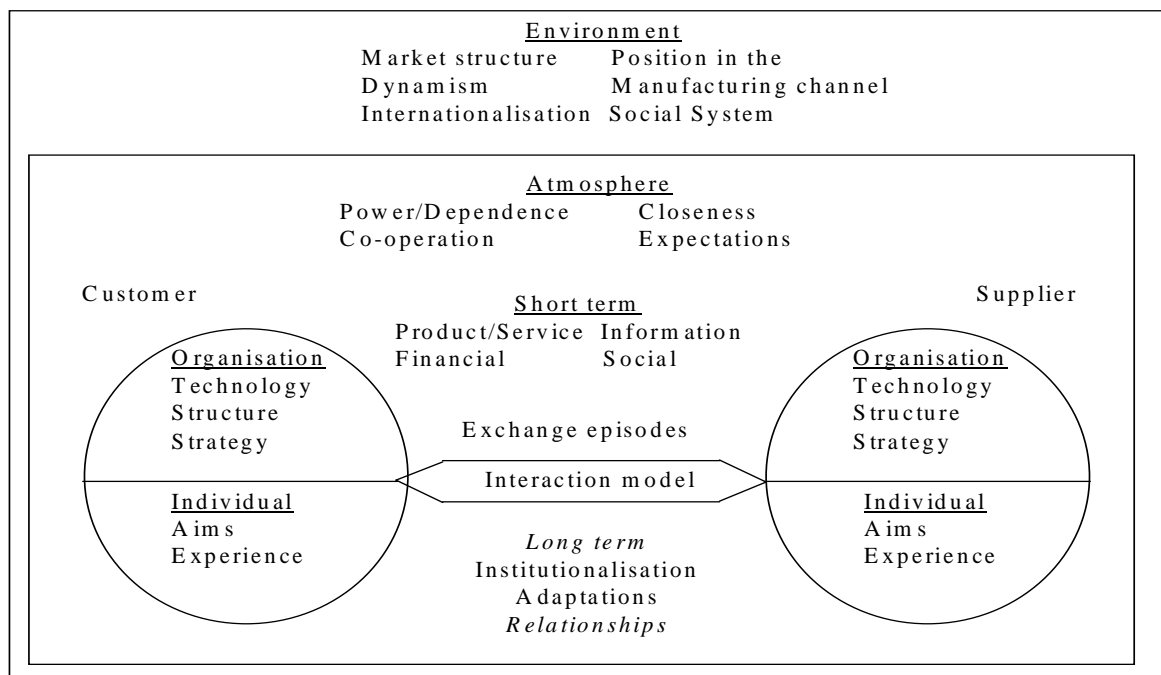


**Figure 3.5. Sheth's Model of Organisational Buying Behaviour**

By convention, the initial part of analysis using Sheth's model focuses on perception and expectations of participants that form the inter- and intra-organisational business scenario. Functional roles augment the framework supporting a decision-making process. The model is based on adversarial negotiation practices and does not attempt to transfer knowledge,

techniques or technology to suppliers. In its place, a comparison is made between expectations and actual performance assessed in terms of 'satisfaction' with the purchase. In scenarios where expectations are unchanging, the variable is supplier performance against set criteria. The model omits production process factors. Given the introduction of continuous improvement stemming from the total quality paradigm, from a supplier development perspective, this simple model requires either an additional element that allows the customer to improve the supplier, or a mechanism by which the supplier can gauge customer's requirements and autonomously respond.

Håkansson's [195] interaction model contextualised approaches taken by customer and supplier organisations and individuals representing them, shown in figure 3.6.



**Figure 3.6. Håkansson's Interaction Model**

Håkansson's model is used to bridge between a purchasing relationship and functional process gestalt to an interactive, development and improvement based relationship with network partners. To achieve the key performance indicators that define world-class manufacturers requires a significantly greater level of sustained collaborative effort both internally within each company and department, and throughout the supply chain between

trading partners. The common objective is to have a seamless chain of associates that link activities along the entire supply chain throughout a network of information exchange nodes at the intra- and inter-business levels. This network can include activists engaged in product and component design, demand forecasting and planning, inventory control, production and delivery logistics [196].

### **3.6.4 Supply Chain Networks**

Supply chain networks are an extension of long-term partnering concepts in manufacturing sectors where the majority of companies are capable of lean supply.

Supply chain competition is based primarily on achieving a superior working relationship with suppliers and customers, particularly during new product development design and tooling phases, networks of businesses can set up and manufacture desirable goods at optimum cost, quality and other key performance levels. Lamming suggested competition is a "practical manifestation of many other environmental factors - economic activity, dynamism, technology trajectories, international developments etc. ...the manner in which the relationship is built and developed will itself determine, to an extent, the nature of the competition" [197].

Established networks are stable relative to the design and generic technology stability associated with the product. Automotive supply networks for example have the opportunity to remain relatively stable as a result of the design maturity of road going vehicles. This allows the group of companies to optimise the logistics within the network toward lean manufacture.

Less stable product ranges, including fast moving consumer electronic goods, with relatively short production life cycles and rapidly evolving component and manufacturing process

technologies require supply networks to have a capability to adapt rapidly. In contemporary terminology, this is industrial customer responsiveness manifested as flexibility and agility.

### **3.6.5 Lean Manufacturing**

The International Motor Vehicle Program (IMVP) was a multifaceted research initiative that explored creative mechanisms for industry-government-university interaction to understand the fundamental forces of dealing with change in manufacturing industry [198]. This study highlighted the gap between the conceptualised lean manufacturer, based on Toyota, and mass production systems typified by Ford.

In response to the lean manufacturing paradigm identified by Womack et al [199], market leaders in many industries are re-defining the concept of the supply chain. The lean paradigm requires stock levels to be reduced, and product quality and service reliability to increase, all at a lower cost.

The concept of lean manufacture is considered by Lamming as the fourth paradigm to affect trading practices in manufacturing industry and in particular purchasing practices that also impacted a wide range of industries and sectors of economies around the world. Lamming [200] modelled the characteristics of typical businesses in a four-phase model, shown in figure 3.8.

## Maintaining and Improving Manufacturing for Competitive Advantage

Model	Nature of competition	Basis of sourcing decisions	Role of data/information exchange	Management of capacity	Delivery practice	Dealing with price changes	Attitude to quality	Role of R&D	Level of pressure
Traditional before 1975	Closed but friendly; plenty of business	Wide; enquires; lowest bid; price-based	Very restricted - minimum necessary	Few problems; some poor scheduling	Large quantities; buyer's choice; steady	General negotiation (annual); a game win/lose	Inspection: arguments/ <i>laissez-faire</i>	One-sided: either assembler or supplier	Low / medium: steady; predictable
Stress 1972-85	Closed and deadly; chaotic	'Dutch Auctions': price-based	A weapon; one-way; supplier must open books	Spasmodic; no system to deal with chaos	Unstable; no control; variable; no notice of changes	Conflict in negotiation: a battle lose/lose	Aggressive campaigns: SQA, etc.	Shared, but only for cost reductions	High / unbearable: volatile
Resolved 1982 onwards	Closed; some collaboration; strategic	Price, quality and delivery	Two-way: short-term e.g. forward build	Gradually improving: linkages appearing	Smaller quantities; buyer's demands stabilizing	Annual economics plus negotiation; win/lose	Joint effort towards improvements	Shared for developments	Medium: some sense of relief
Partnership Japanese 1990 onwards	/Collaboration; tiering; still dynamic	Performance history; long-term source; costs	Two-way: long-term e.g. knowledge of costs	Coordinated and jointly planned	Small quantity; agreed basis; dynamic (JIT)	Annual economics + planned reductions win/win?	Joint planning for developments	Shared: some black or grey box	Very high: predictable

**Figure 3.8 A Four-Phase Model of Customer-Supplier Relations (Lamming)**

A significant aspect of the phase changes is greater emphasis on open, complete and honest communication between participants directly affected by, forecasting, or controlling the situation. This requires a significant shift from adversarial trading where information is treated as a source of power and leverage, to trust based co-operation, [201, 202, 203]. This change is due to problems, associated with neglecting the actual situation due to focusing on idealised mathematical modelling, that Scott suggests include:

- Excess stocks
- Shortages resulting in line stoppages and expediting costs
- Poor usage of data due to inaccurate bills of material or lack of availability
- Obsolete stock as a result of inadequately communicated design changes and lack of adherence to design for logistics guidelines that resulted in
- Disproportionate acquisition costs [204].

Scott suggests the scope of the trust-based relationship extend to co-operation to:

- Aim for minimal levels of stock with both parties
- Allow reasonable profit margins for the service provided by the supplier
- Reduce paperwork - purchase orders, invoices, Quality Assurance documentation
- Take full advantage of information technology

- Let the supplier manage existing stock and purchase orders
- Communicate changes to the supplier e.g. build programmes.
- Involve the supplier during component design and selection
- Generally reduce waste and eliminate non-value-added activities.

Cusumano [205] identified Honda's product development and Toyota's manufacturing characteristics and the impact this type of business logistics have on Japan's infrastructure. For lean manufacture to work, the supply chain must be stabilised in terms of gross demand volume per period time, thus eliminating the Forrester and Burbidge effects at the assembler [206]. To ensure efficient use of the assembly plant, the concept of 'factory within a factory' [207] is used in plants producing relatively small high technology consumer goods such as computers [208] and mobile telephone transceivers [209].

### **3.6.6 Agility and Coevolution**

The customers' requirement itself changes frequently, in line with latest thinking, knowledge and techniques, thus requiring an on-going, long-term relationship between user and supplier. To ensure the long-term competitiveness of the relationship, the supplier therefore must have the flexibility, or agility, to co-evolve by jointly adapting the business model. Rigid adherence to defined roles in this context are being replaced by business competition based on experiential learning [210, 211]. Eisenhardt and Galunic [212] compare co-evolution and the conventional collaborative relationship paradigm depicted in table 3.1.

**Table 3.1. Traditional Collaboration versus Coevolution**

	Traditional Collaboration	Coevolution
Form of collaboration	Frozen links among static businesses	Shifting webs among evolving businesses
Objectives	Efficiency and economies of scope	Growth, agility, and economies of scope
Internal dynamics	Collaborate	Collaborate and compete
Focus	Content of collaboration	Content and number of collaborative links
Corporate role	Drive collaboration	Set collaborative context
Business role	Execute collaboration	Drive and execute collaboration
Incentive	Varied	Self-interest, based on individual business-unit performance
Business metrics	Performance against budget, the preceding year, or sister-business performance	Performance against competitors in growth, share, and profits

New requirements are placed on businesses either periodically or increase in a subtle, continuously increasing manner. To remain competitive in the longer-term, corporations must adapt, learn to change and embrace advancements in technology and progress in the business environment within which they operate.

Hamel and Prahalad [213] suggest when management focuses on maintaining the status quo for too long they would have to resort to the brutal work of restructuring the business by refocusing, delayering, decluttering and right sizing. These initiatives attempt to increase productivity by reducing the payroll headcount. Hamel and Prahalad suggest that companies that most aggressively reduce headcount can be classified in a "rogue's gallery of under-managed or wrongly managed companies".

Deal and Kennedy [214] aim to develop or increase flexibility characteristics to 'do what the customer values' and help companies avoid deep routed bureaucratic organisational styles.



They identify several characteristics that are common to well-managed firms that ultimately will enhance product quality and the employee-firm working relationship:

- No formal organisational charts.
- Few formal rules, meetings, and memos.
- Flexible jobs
- A system of self-correction.
- Minimum status symbols.
- Two-way communication.
- A carefully defined employee selection process.
- A well-structured social organisational programme.

Dove [215] categorises craft, mass, lean and agile manufacturing, in figure 3.8, in terms of comprehensiveness, fixed layout, flexible and reconfigure-able. Dove supports Womack et al [216] by suggesting the reconfigurability of an enterprise is the principal addition to lean that attempts to meet individual customer needs by offering significant variety, while retaining advantages of modern manufacturing techniques. This permits mass customisation and low unit costs.

	Craft	Mass	Lean	Agile
Reconfigurable				X
Flexible			X	
Fixed		X		
Comprehensive	X			

**Figure 3.8 Dove's Evolution to Agility Model**

Goldman, Nagel and Preiss [217] surveyed 100 companies and identified four principle dimensions to business' agility:

- Enriching the customer by providing significant unique benefits;
- Organising to master change and uncertainty by rapidly reconfiguring facilities, people's roles, responsibilities and tasks;
- Leveraging impact of people and information by encouraging innovation and entrepreneurialism, supported by providing continuous training; and

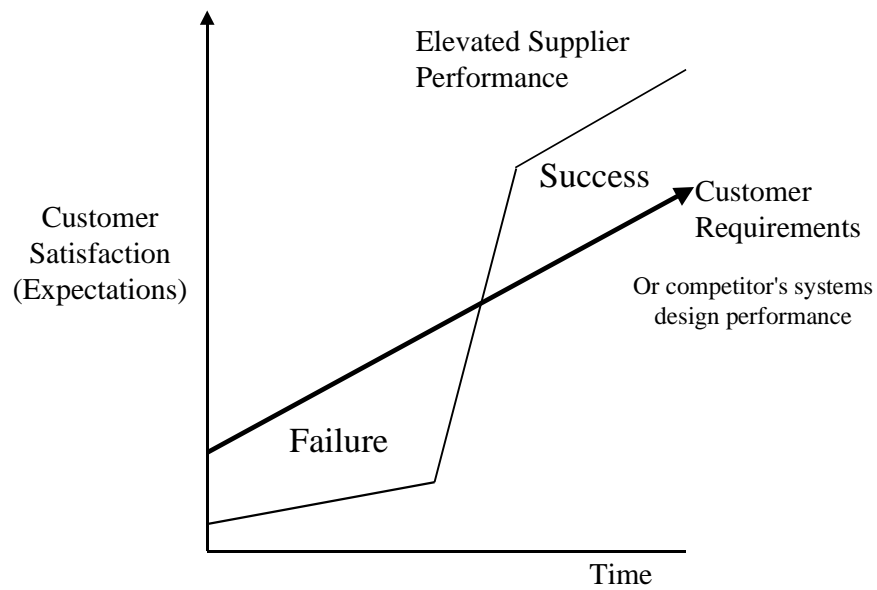
- Co-operating to enhance competitiveness at inter- and intra-organisational levels through out the supply chain.

Kidd [218] suggested achieving agile manufacturing is based on developing companies using three primary resources:

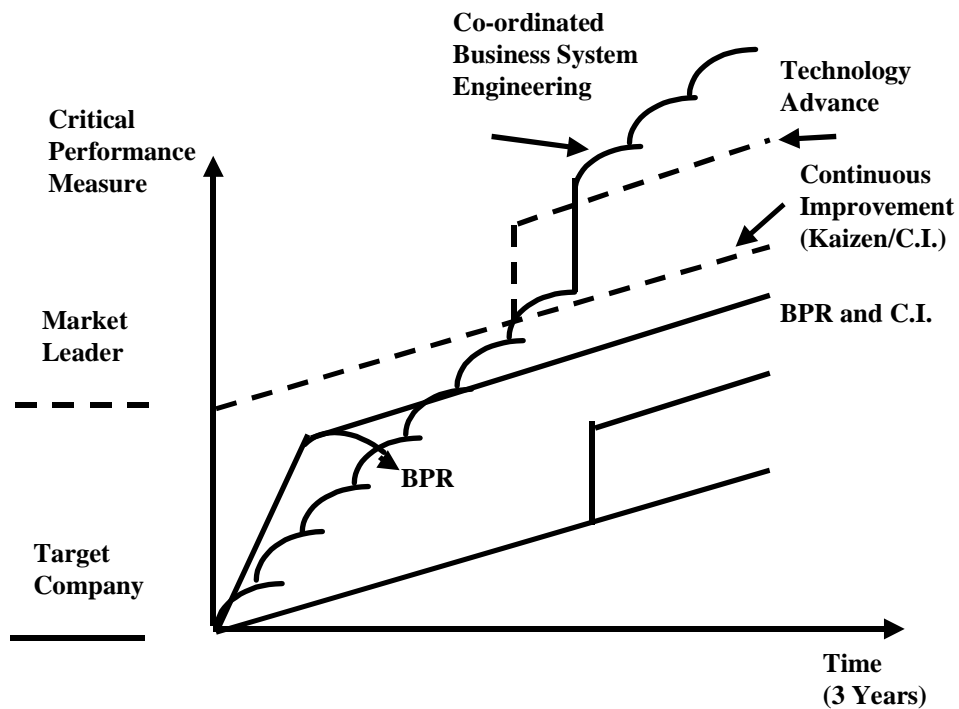
- People - knowledge, skill base and empowerment.
- Organisation - innovation, appropriate management style and authority structures, and
- Technology - flexible information tools with ergonomic interfaces.

Warren [219] and Unipart [220] suggest a company and its supply chain has to have a policy of continuous improvement and develop to surpass competitors' performance to achieve success as depicted by figure 3.9.

Watson [221] extends the model used by Warren and Unipart by suggesting key performance metrics are improved on a project by project basis and as a result of implementing solutions derived from technology breakthroughs. The multiple project concepts proposed by Watson presumably allow networks of companies to prioritise management attention and investment opportunities. This has the effect of reducing perceived risk and companies then have the opportunity to apportion them to dependent, independent and intervening or extraneous variables.



**Figure 3.9 Key Performance Metric Improvement Over Time - Satisfaction, Success and Failure Adapted. (Warren, Unipart)**



**Figure 3.10 Greenfield's Sequential Curvy-Linear Performance Improvement Model**

Greenfield [222] builds on Watson's work by depicting, in figure 3.10, performance improvements in a series of phases using curvy-linear relationships based on Pareto's concept and the learning curve that anticipate initial gains will be rapid and then

subsequently optimised over a settling in learning period. In effect, Greenfield alters the scale of the axes of the graph to absolute values rather than artificially designated ranges used in the Warren and Unipart model. This distinction in representation hypothetically is linked to improvement initiative fatigue due to a lack of understanding of an overall programme or framework for change.

Rummler and Brache [223] developed a three by three matrix, shown in figure 3.11, that summarises their model that suggests to achieve improvement, organisational change is required at three levels. Rummler and Brache propose a case for a holistic approach to organisational improvement. They argue most initiatives aim only at one or two of the three levels and hence are sub-optimal. Most training initiatives for example focus on Job/Performance, automation focuses on processes, and strategic planning and reorganisation initiatives make a great effort to progress from plans to change structures to the actual achievement of improved performance. The prime managerial emphasis at level two is on designing efficient processes, and appointing champions and goals.

		Goals	Design	Management
Level 1	Organisation Level			
Level 2	Process Level			
Level 3	Job/ Performance Level			

**Figure 3.11. Three by Three Organisational Improvement Model (Rummler and Brache)**

### **3.7 Supply Chain Development and Improvement**

Supply chain development focuses on increasing value added as a result of business decisions to specialise in core activities; this is an extension of Smith's [224] division of labour between inter-dependent business enterprises. Storck [225] identifies the relationship dynamics between customer and supplier are similar to the relationship between satisfaction and dissatisfaction, and hygiene and motivators. He suggests teams can concentrate on reconciling differences or trying to understand similarities.

Purchasing functions, in conjunction with cross-functional teams are engaged in processes to identify performance improvement opportunities, most appropriate supply company partners, and develop and deliver appropriate training. Partnership sourcing [226] is promoted as an alternative to traditional adversarial purchasing practices based on price. Both partners' work together to achieve optimum commercial advantage, quality and cost for both themselves and satisfy their end customer. Partners agree objectives and build relationships based on trust, open communication and provide assistance to accomplish shared benefits. Solutions are jointly developed, though funding for these projects may be required from the lead-company as a non-recurring expenditure (NRE).

### **3.8 Summary**

This chapter outlined the macro level paradigms that have formed the basis of strategies to achieve competitive advantage by affecting inter- and intra-company structures.

Strategies to vertically-integrate, form non-equity-linked associations, or to operate in equity distributed keiretsu type structures are corporate level attempts to create competitive advantages. The ability to acquire quality goods at competitive unit prices can be enhanced or reduced due to the corporate structure influencing the buyer-supplier relationship. Initiatives to enhance suppliers' key performance indicators likely would be affected by the

corporate environment, purchasing agents' decision making processes and the interpersonal relationship dynamics that exist between participants employed by separate parts of the supply chain. Key conclusions from this are that:

- Improvement initiatives tend to be designed based on systematic strategies such as the brutal work of restructuring the business by refocusing, delayering, decluttering and right sizing and
- The effectiveness of improvement implementations to an extent is dependent on purchasing representatives' and change agents' philanthropic attitudes.

Chapter 4 reviews supplier development specific literature. Focus is on the negotiation and improvement activity levels associated with implementing changes that are driven by the customer to improve the supplier's performance.

## Chapter 4

# Supplier Development

“Japanese and American management is 95% the same and differs in all important respects”

Takeo Fujisawa, co-founder of Honda Motor Company

### 4.1 Introduction

This chapter examines supplier development specific literature and determines the limits of the state of the art. Supplier development models and inhibitors to implementation are identified. Supplier development models have focused on the activities undertaken by the purchasing staff. As with other intra- and inter-company improvement initiatives, the number of supplier development initiatives undertaken and the success rate are comparatively low. Further literature is reviewed from training, learning and facilitating fields. The chapter identifies that supplier development models have focused on the first of three approaches: systematic, dynamic and a continuous improvement attitude. The chapter concludes that the Honda BP approach used at TRW in Mexico most closely fits with the continuous improvement attitude by focusing on hygiene factors in the work place to stimulate and sustain motivation to improve. This case supports the theoretical framework of a preconditioning programme. The chapter further concludes that supplier development is fundamentally a learning process undertaken by individuals working within groups and that existing conceptual models of supplier development focus on company to company level preparatory and monitoring activities undertaken by customer's purchasing staff.

## 4.2 Supplier Self-Development and Customer Assisted Supplier Development

Assemblers from the auto and electronic sectors, together with retail chains are regarded by many observers, noted in chapter 3, as being the premier *Sources* of development programmes upon their supply chains. In order to achieve higher levels of business resource utilisation, organisations target existing and potential suppliers and customers with development and/or improvement programmes. Assemblers deploying supplier development teams, aim to increase overall supply chain management (SCM) performance through development programmes and by stimulating improvements.

Assemblers facilitate their programmes by making available resources to develop and sustain better SCM relationships. They assist strategic suppliers with training in new tools, techniques and methodologies. This reduces stress involved in deciding which cure-all should be adopted, because the development programme is structured to enable the assembler to act as a mentor for its suppliers' development. They promote quality, benchmarking, insist upon continuous and/or annual cost, quality and delivery performance improvement targets and encourage lean initiatives.

### 4.2.1 Supplier Development and Partnership Sourcing

The term 'partnership' has legal connotations hence some businesses prefer to use the term partnering to define the paradigm supporting their activities. Partnership sourcing in this research is interpreted as a state of being - companies are partners, and is couched in specific cultural and behavioural ethos. Supplier development by contrast, is based on implementation - carrying out activities. This difference enables purchasing to operate in adversarial modes, while encouraging suppliers to develop and providing support services to achieve performance criteria - supplier development in a traditional purchasing environment. Partnership sourcing is a long-term state, while supplier development is a transition - a



project managed transfer and implementation of knowledge, orders, skills and techniques. This implies the conversion or creation of long-term partnering relationships with suppliers focused around specific, relatively important purchased items. The term conversion is used since in some circumstances customer and supplier have already had long-term relationships based on adversarial or commercial interactions, and attempts are being made to alter the status to partnership.

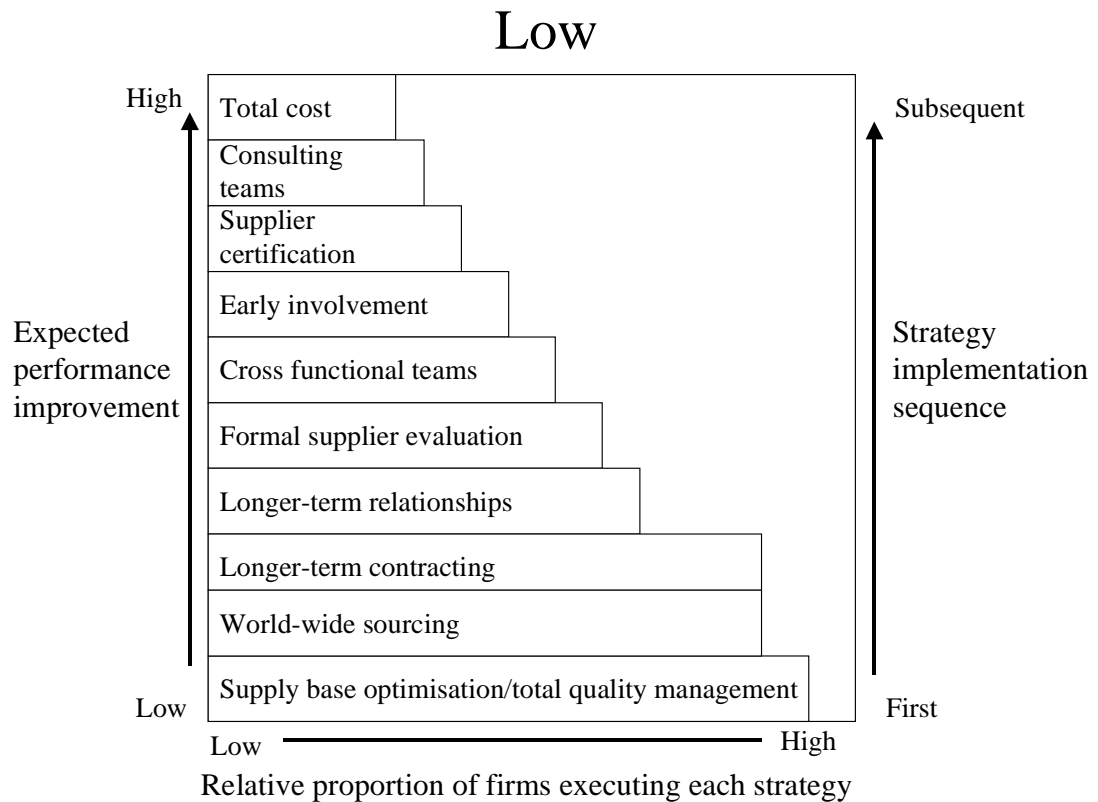
#### 4.2.2 Supplier Development - Survey Evidence

Watts and Hahn [227] surveyed 81 suppliers to determine customer's emphasis and progress, concluding supplier development initiatives to be more widespread than they expected. Walker [228] highlights Coopers and Lybrand's survey results listed below, showing supplier development ranked 7th, early supplier involvement 11th and supplier performance evaluation 13th overall on a prioritised scale.

1. COST REDUCTION ACTIVITIES
2. QUALITY IMPROVEMENT INITIATIVES
3. LONG TERM CONTRACTING
4. REDUCTION IN THE NUMBER OF SUPPLIERS
5. LONGER TERM SUPPLIER RELATIONSHIPS
6. SINGLE SOURCING
- 7. SUPPLIER DEVELOPMENT PROGRAMMES**
8. USE OF FULL SERVICE SUPPLIERS
9. CROSS FUNCTIONAL SOURCING TEAMS
10. CORPORATE WIDE CONSOLIDATION OF PURCHASING
- 11. EARLY SUPPLIER DESIGN INVOLVEMENT**
12. BUYER SELLER CONSULTING TEAMS
- 13. SUPPLIER PERFORMANCE EVALUATION**
14. COST BASED PRICING

McGinnis and Vallopra [229] emphasise early supplier involvement in new product introduction. The Oliver Wight ABCD Checklist by Souza [230] emphasises performance measurement as a means of gauging progress toward European quality award evaluation. Larson [231] tested and confirmed the hypothesis that co-operation between customer and

supplier would reduce total costs and enhance product quality based on 712 survey responses.



**Figure 4.1 Purchasing Strategy Implementation Sequence (Monczka and Trent)**

Monczka and Trent [232] correlate the proportion of firms utilising a sequence of elements to be achieve various levels of performance improvement, shown in figure 4.1. It is interesting to note that these elements do not refer directly to training, development and education in order to enhance work performance and capabilities.

Edwards' [233] profile of Ken Lewis highlights that take-up of offers, given by customer companies to enhance business performance in partnering supplier development programs, in the 1980s was unusually low. Lewis ascribed this resistance to change to "The attitude of SMEs ... they will not open their minds."

Hines reports on a survey by Consigny [234] examining automotive, electronic and machine tool supply chains from the perspective of supplier associations. This revealed a significant

range of approaches and extent that Japanese lead-companies co-ordinate supplier-associations. The study revealed that significant numbers of lower tier suppliers in Japanese supply chains receive free-issue materials. This potentially would lead to reduced supplier leverage and rewards based on conversion of materials and high process yield rates.

Monczka and Trent [235] collected 190 data sets via surveys between 1990 and 1993 and compared projected to actual results for current purchasing and materials management strategies. They state focus in the 1990s would emphasise core competencies and proprietary technologies, intense competition resulting in pressure to innovate and compete by continuously improving key performance results. Monczka and Trent also recognised that customer expectations rose faster than actual supplier performance improvement and that aggressive supply base reductions alone do not stimulate suppliers to enhance performance. They conclude that early supplier design involvement, direct supplier development and rewards for supplier performance enhancements can accelerate the rate of improvement.

An Arthur D. Little survey [236] indicated increasing commitment and trust in partnerships between customer and supplier. The findings indicate buying companies are focusing on key supplier relationships, numbering typically 10 or less, and that the key issue to facilitate more extensive implementation initiatives is provision of advice and knowledge about how to project manage the change process. Krause et al and Handfield et al support this.

Krause [237, 238], and Krause and Ellram [239, 240] survey literature and industrial supplier development practices. Krause and Ellram conclude from the literature that most supplier development activities are short-term, and are targeted at improving supplier' products and service performance in preference to enhancing their capabilities. From this set of data, practice it seems only to be fulfilling half of the sources of competitive advantage identified by O'Laughlin et al in figure 3.2.

### 4.2.3 Supplier Development - Definitions, Conceptual, Observational and Prescriptive Approaches

Leenders' [241] reports on various situations occurring in Canadian industry during the early 1960s. His definition for the basic concept used in that study was "Supplier development is the creation of a new source of supply by the purchaser. ...It is primarily directed toward the development of new sources of supply, rather than the furthering of relations between purchaser and existing suppliers". Leenders divided his analysis by size of supplier.

Assuming the customer size is constant, he states that:

"First, differences in supplier size require different supplier development considerations. Such aspects as the need for assistance, follow-up, and control tend to vary with differences in supplier size. Small suppliers tend to need far more assistance than larger suppliers do, for example. Second, the common concept of supplier development held by purchasing executives is that it is limited to small suppliers alone. It is true that the development of a small supplier may be more easily accomplished and yields highly rewarding results for both parties. This in no way refutes the need for the development of large supplier(s) ... as well as small."

He points out that both types produced equally rewarding results. Leenders stated that:

Supplier development implies a degree of executive involvement not normally encountered in supplier selection. For example, it frequently places a purchasing manager in a position where he must persuade a prospective supplier to accept an order.

General supplier development considerations outlined by Leenders to be necessary for successful activities include the:

- Need for perseverance and planning
- Requirement of good faith by both companies
- Need for control and a gradual approach
- Probable existence of supplier internal management resistance
- Determination of price, supplier investment,
- Make or buy decisions.

Hines' [242] work on supplier associations in the Welsh Economic Development Regions contributed to the definition:

activities made by a customer to help improve the strategies, tools and techniques employed by suppliers to improve their competitive advantage, particularly by removing intra-company waste.

Hines states that supplier development is a crucial element of the process of emulating performance benchmarks emanating from Japan.

Monczka, Trent and Callahan call for senior managerial action to reduce the number of suppliers in supply bases by a *natural selection process*. They explain that: “By aggressively increasing supplier performance expectations, a buying firm expects supplier contributions to increase at an accelerated rate. Eventually, firms must maintain only those suppliers capable of satisfying higher performance expectation levels” [243]. From this basis, Monczka and Trent [244] define *direct* and *indirect supplier development* as:

an aggressive approach for accelerating supplier capability improvement. *...providing additional business, capital, equipment, technology, or the assignment of support personnel to a supplier's facility directly linked to improvement of supplier capabilities.*

Indirect supplier development stresses *supplier encouragement, training, increased performance goals, and self-improvement.*

Krause and Ellram [245] define supplier development more generally as:

any effort of a buying firm with a supplier to increase its performance and/or capabilities and meet the buying firm's short and/or long-term supply needs.

Krause and Handfield [246] update Krause and Ellram's earlier definition from a unilateral initiative, to be a suitable definition for supplier associations:

Supplier development is a bilateral effort by both buying and supplying organisations to jointly improve the supplier's performance and/or capabilities in one or more of the following areas: cost, quality, delivery, time-to-market, technology, environmental responsibility, managerial capability and financial viability.

This definition is broader and may be interpreted to suit the situation. In recognising that development may be bilateral, reciprocal and mutual, Southey and Newlands [247] defined customer/supplier-development as:

the process of assisting existing customers and/or suppliers to develop and improve their overall capability, performance and versatility, whilst meeting and serving mutual needs and the customer in the most cost-effective and resource efficient manner.

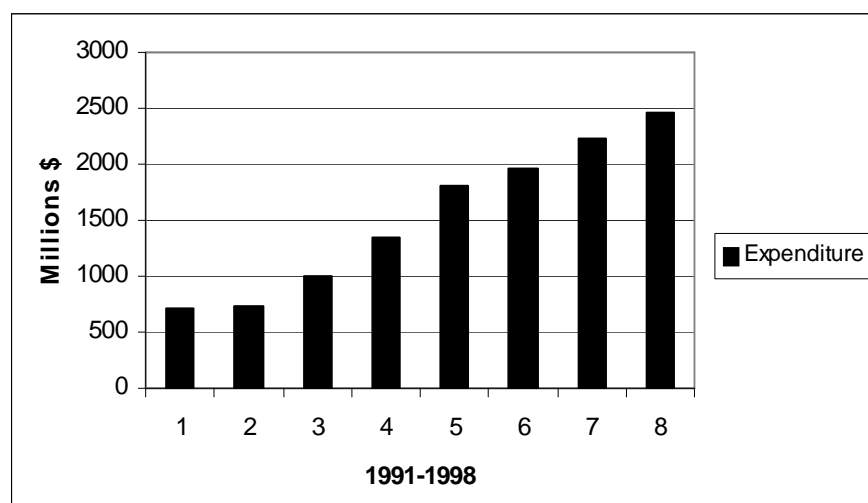
Although there is some similarity between the definitions, there is still no one dominant methodology definition or interpretation of supplier development. The number of supplier development events highlights the need to investigate the assumptions and programmes of reported case studies.

Hahn, Watts and Kim analysed Hyundai as a supplier development process case study [248] and Galt and Dale provide one UK case study [249]. Companies themselves are now making public their own case histories and practices, notably via Internet sites [250, 251].

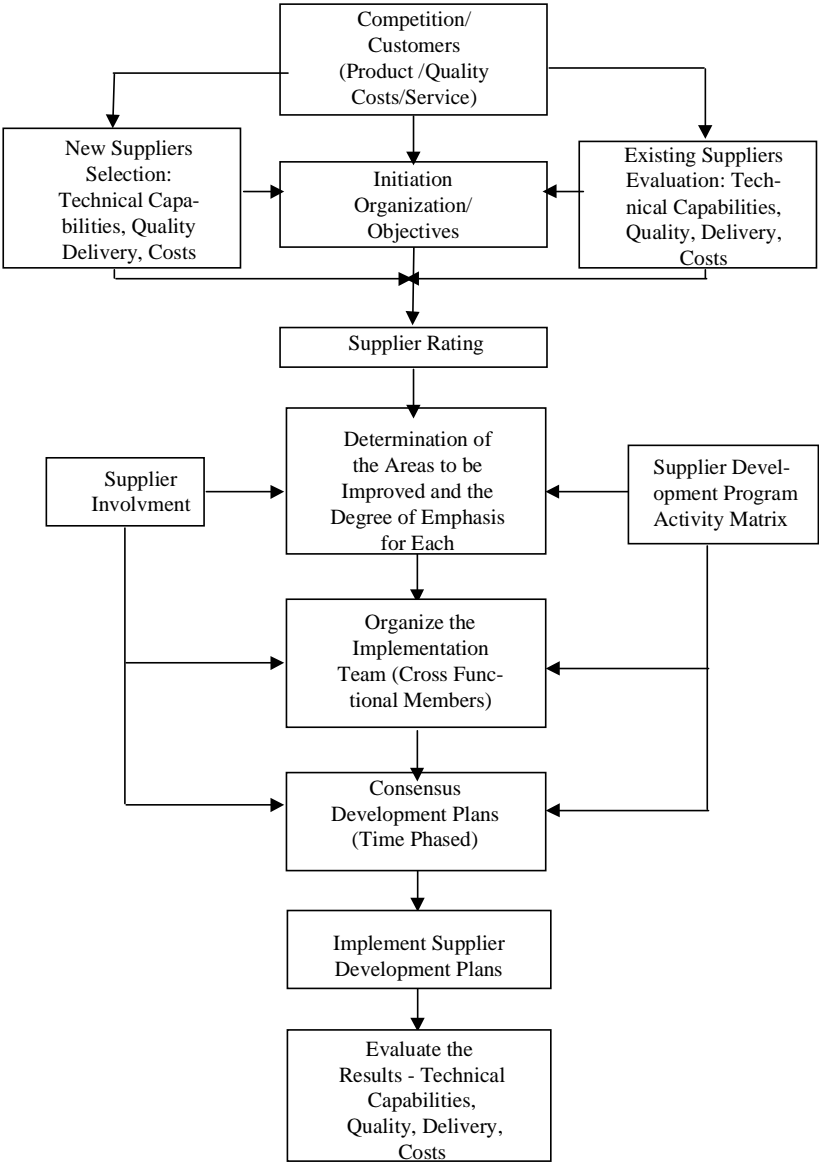
The interpretation of supplier development has extended in its use, particularly in the United States, toward lower tier small to medium sized enterprises managed by high potential minority groups [252, 253], demonstrated by the rise in spend on this size of supplier. This is a result of:

"Public Law 100-656 that requires OEMs receiving government contracts in excess of \$500,000 give preference to, or put good faith effort toward, setting aside as much as 20 percent of their subcontracts (or the priced bill of materials) for small, disadvantaged, and minority-owned businesses. Of this 20 percent, 5 percent is allocated for small disadvantaged businesses and 5 percent for businesses owned by women." [254].

The Ford Motor Company states they have the highest spend of any U.S. company in this area [255], represented by year in figure 4.2. Other companies are offering supply chain management support services to manufacturing firms [256].



**Figure 4.2 Ford Motor Company's Expenditure on Minority Suppliers**



**Figure 4.3 Prescriptive Supplier Development Process (Hahn, Watts and Kim)**

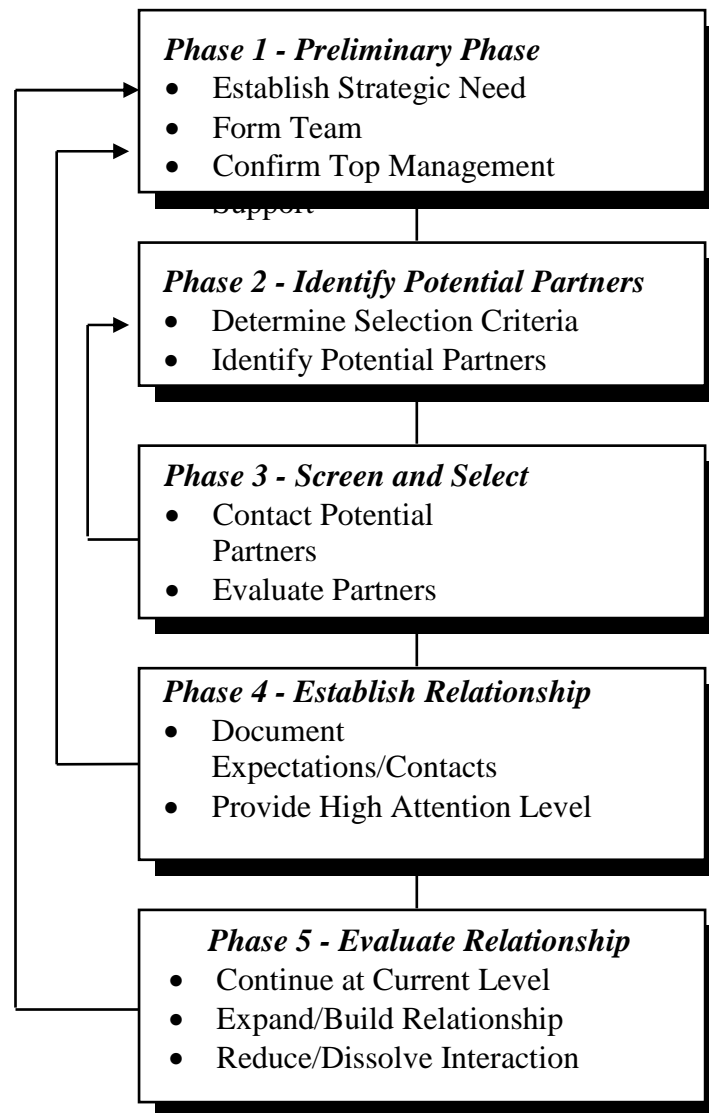
Hahn, Watts and Kim [257] proposed a prescriptive process flow chart model, that depicts at a top-level customer's change agent activity emphasis, shown in figure 4.3. As the basis of benchmarking suppliers, the model suggests customers identify learning and improvement opportunities by comparing supplier's actual capabilities to a capabilities matrix, shown in figure 4.4. This matrix forms a 'pick list' of desirable attributes associated with a world class supplier base.

Related Areas Capabilities	Product Related	Process Related	Operating Systems Related
<b>Technical Capabilities</b>	<b>Capabilities in:</b> •Design •New Product Introduction •Feasibility Testing •Product Improvement	•Process Capability •Process Design •Automation •Reconfiguration	•CAD/CAM •CIM/FMS •JIT/MRP
<b>Quality Capabilities</b>	•Specification Limits •Incoming Materials Control	•Process Capability •Testing Equipment •Workmanship (skills)	•Quality Assurance Program •Quality Circles •S.P.C. Program •Worker Training
<b>Delivery Capabilities</b>	•Product Mix •Materials Lead Time	•Capacity Level •Process Flexibility •Set-up Times (SMED)	•Order Entry System •Scheduling Flexibility •Transportation/ Inventory System
<b>Cost Capabilities</b>	•Value Analysis •R&D Expenditure •Cost Reduction Programs	•Process efficiency •Capital Investment •Rationalisation of Work place	•Work Productivity •Indirect Costs •Control

**Figure 4.4 Supplier Development Capabilities Matrix (Hahn, Watts and Kim)**

Ellram [258] proposed a five phase model to develop and enhance partnerships with suppliers, shown in figure 4.5.





**Figure 4.5 Ellram's Five Phases in the development and evolution of purchasing partnership**

Hines (1994:274-288) suggests a 10-point supplier development initiative implementation methodology developed from Camp's [259] benchmarking methodology.

1. Benchmark present competitive position
2. Select appropriate co-ordination and development tools
3. Gain internal acceptance and create cross-functional teams
  - Establish the management environment
  - Develop cross-functional team
  - Gain an understanding of the firm's requirements and those of its customers
  - Training the cross-functional team
  - Developing implementation plans
4. Select appropriate suppliers

5. Benchmark supplier position
6. Jointly target improvements
7. Focus co-ordination and development efforts
8. Undertake group activities
  - Yearly conferences
  - Series of seminars for senior management
  - Specific tools, techniques and strategies training or direct line staff
  - News letter updates
  - Visits to demonstration companies
  - Social events to promote informal ties
9. Measure improvements
10. Refocus size of group and target areas. Once this has been completed, return to point 5. Benchmark supplier's position.

These activity phases follow the Deming cycle [260]: plan, do, check and act. Hines' points 1-4 are concerned with pre-planning. Points 5-7 are concerned with planning. Point 8 is implementation (Do). Point 9 is check. Point 10 is act.

Lascelles and Dale [261] identified key steps in a supplier development programme:

- Establish and articulate programme objectives
- Set priorities for action
- Identify key suppliers as potential long-term partners
- Make plans to reduce the supplier base
- Communicate the programme objectives
- Methodology to key suppliers
- Assess the capability of suppliers to meet purchase requirements
- Engage in advanced quality planning with suppliers; formally recognise suppliers which achieve "preferred" status
- Develop an on-going quality improvement relationship with suppliers based on a free exchange of information.

The last of their points is an imperative – *to do*, rather than a current state that *is*. The 'improvement relationship' raises the question is it same as an attitude for continuous improvement.

Briggs [262] used a six-phase methodology for assessing business performance. The elements of the methodology are, however, relatively generic.

1. Identify strengths and weaknesses of the current assessment process;
2. Researching alternative approaches currently being practised by industry;
3. Brainstorming new ideas and potential alternative methods of approach to the assessment process;
4. Selecting the 'best' approach for the business in context with the basic principles;

5. Developing a draft procedure, and benchmarking the result both internally and externally;
6. Amending the draft procedure and producing the final result.

Based on page 52 of Womack and Jones [263], the following six steps are identifiable and applicable in-house and throughout the supply chain.

1. Define value from the customer's perspective
2. Identify the entire value stream
3. Ignore the traditional boundaries of jobs, careers, functions or firms and work in cross functional teams
4. Focus on the actual Target
  - The specific design, order or product
  - Never let it out of your sight from beginning to end – in order to complete the task
5. Rethink specific work practices and tools to eliminate back flows, perhaps using 'from-to' analysis
6. Identify scrap and stoppages of all sorts so that the design, order, and production of the specific product can proceed continuously and uninterrupted, though including appropriate product mix.
  - Include cluster analysis, quality, concurrent engineering, simplified and unified customer liaison interface and pull, using appropriate shop and interplant layouts - cells and through the wall deliveries from adjacent suppliers

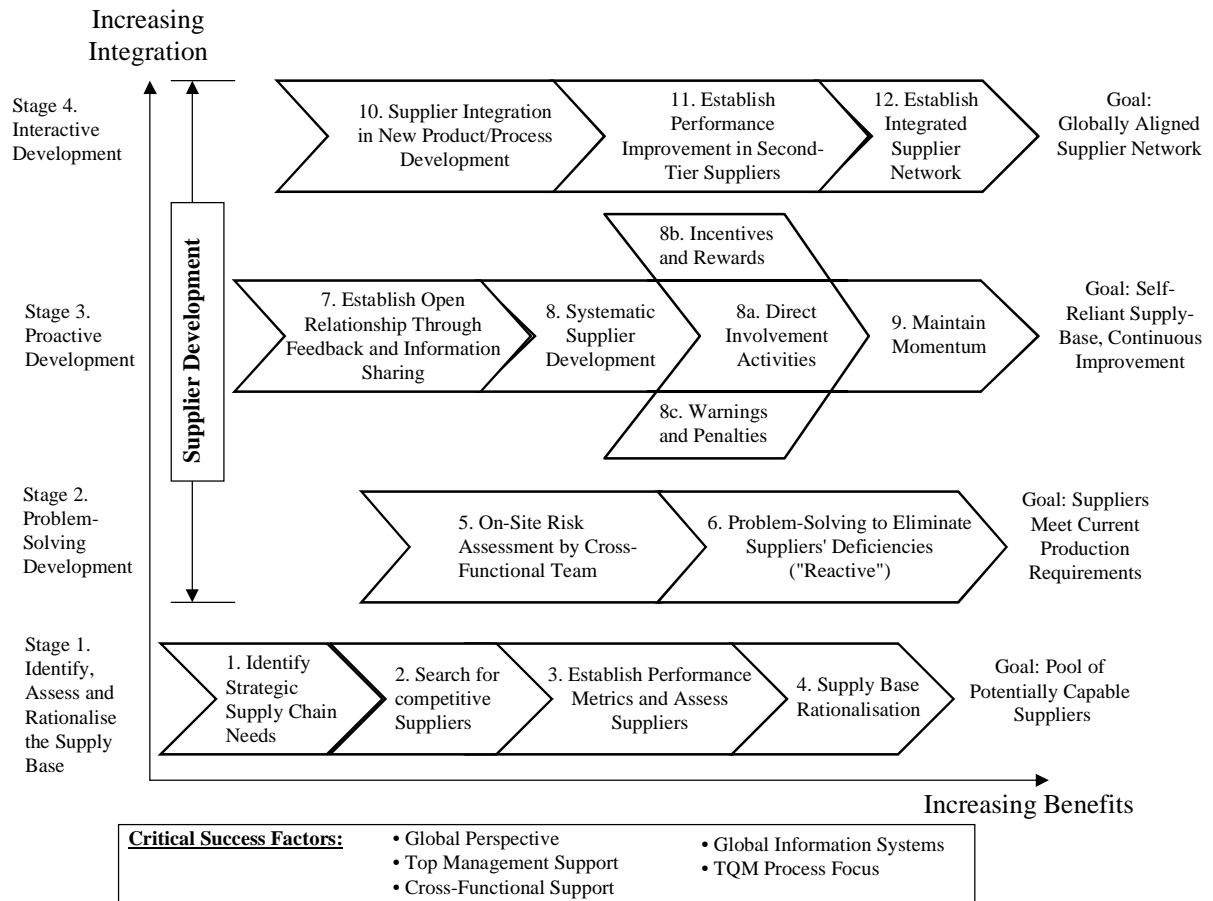
Krause and Handfield [264] proposed a four stage, twelve element flow chart based implementation strategy for supplier development initiatives shown in figure 4.6. Krause and Handfield also highlight four active elements and seven project management elements listed below.

Active Elements:

1. Identify, Assess and Rationalise the supply base
2. Problem-solving development
3. Proactive Development and
4. Integrative Development

Seven-stage Process to Implement Supplier Development initiatives:

1. Identify Critical Commodities
2. Identify Critical Suppliers
3. Form a Cross-Functional Team
4. Meet with Supplier Top Management
5. Identify Key Projects
6. Define Details of Agreement
7. Monitor Status and Modify Strategies.



**Figure 4.6 Supplier Development Project Management Elements identified by Krause and Handfield.**

Handfield et al [265] endorsed a two by two commodity portfolio matrix to categorise required materials by criticality and opportunity in order to infer which suppliers or processes should be prioritised for supplier development.

The models presented thus far reasonably follow Sheth's purchasing decision model, shown previously as figure 3.5. Each omits contingency protocols to manage potentially rapidly changing requirements. The models assume supplier co-operation and the customer's purchasing organisation is leading the improvement and development process. A growing body of evidence suggests improvement initiatives do not achieve the stated objectives. This is, in part, due to implementation fatigue and resistance to change.

#### 4.2.4 Improvement and Development Initiative Resistance and Fatigue

Handfield et al [266] enumerate inhibitors to implementation, progress and creating results. They state that only a few of supplier development initiatives achieved anything more than the first three of four stages of the seven project management elements. They specify four barriers to successful implementation arose:

- 1/ During meetings between buyer and supplier management teams;
- 2/ When defining key projects
- 3/ When defining agreement terms and determining metrics for success, and
- 4/ When monitoring project status and subsequently modifying strategies.

The first and third of these remarkably resemble issues associated with the adversarial traditional trading paradigm that are based on win/lose negotiation strategies, what Handfield et al call the 'bargain'. The second and forth relate to unsupportive management, lack of commitment or trust, availability of resources and target project over complexity. Lewis [267] concurs with Handfield et al concerning the lack of voluntary suppliers taking up offers to be developed by their customers. The first and third points identified above can be associated to the philanthropic attitudes identified in chapter 3.

To facilitate the management of conflict within the dyadic relationship between customer and supplier, Handfield, et al further highlighted the use of an ombudsman. The role is sponsored by the customer company to arbitrate, resolve conflict and reduce resistance to change by reassuring suppliers. The ombudsman uses interpersonal communication, for instance using behavioural guidelines such as Fisher and Ury, and Fisher and Brown's unconditionally constructive strategy, to deal with the soft side of the business. This creates a triadic relationship. The psychological relationships are reminiscent of 'good cop/bad cop' scenarios.

Purchasing and other specialists in a multifunction team represent customer company management when negotiating and introducing the concept of supplier development to supplier's senior management. In such circumstances, the participants would tend to divide

into either technical or administrative management. The ratio of successful implementations of supplier development to offers could therefore be considered a purchasing and managerial performance indicator. Given the low take up rate of supplier development, what are the route causes of this?

Given the cross-functional nature of the teams involved, a significant proportion of the supplier development team participants stem from technical backgrounds. For new participants, this is likely to be the first time they have been involved in a managerial level process. The transfer to a front line management position either is made as a temporary secondment out of necessity, or as a result of a conscious decision and commitment on the part of the individual. Bayton and Chapman [268], Balderston [269] and Badawy [270] provided six categories representing reasons why engineers and scientists moved of their own volition into management positions:

- Financial advancement;
- Authority, responsibility, and leadership;
- Power, influence, status, and prestige;
- Advancement, achievement, and recognition;
- Fear of technological obsolescence; and
- Random circumstances.

Earlier research by Miner [271] identified 35 potential causes of unsatisfactory performance from technical and administrative management relating to individuals, the job and work context. Badawy [272] subsequently identified stereotypical causes of troublesome transition from technologist to manager:

- |  |  |
|--|--|
| • The nature of technical education                                | • Bias toward objective measurement                  |
| • The nature of the organisation's management systems and policies | • Paralysis by analysis                              |
| • Technical competence as a criterion for promotion                | • Fear of loss of intimate contact with their fields |
| • The dual-ladder system   | • Technologists as introverts                        |
| • The nature of the management task.                               | • Poor delegators                                    |
| • The nature of scientists and engineers as a group                | • Inadequate interpersonal skills.                   |

Badawy additionally proposed seven mechanisms to ease the transition to management:

- Identify managerial potential
- Employ better selection methods
- Make the dual ladder work
- Provide appropriate support, orientation, and coaching
- Reward managers for subordinate's development
- Provide training in the functions and skills of management
- Provide opportunities for management internships.

Status symbols and prestige associated with management's offices and other perks in hierarchical organisations are pointed to by Badawy relating to an 'index of success'. For Japanese management style influenced companies, these seem progressively to be replaced by open plan offices, company standard jacket and trouser suit work attire, and empowerment to entrepreneurially influence the business.

The relative inability of organisations promoting supplier development to secure co-operation and implement change programmes with their suppliers in part also can be ascribed to leadership. Lack of leadership, or in-appropriate leadership style, combined with reward structures, provides the basis for arguments proposed by Carlisle and Parker [273], and Leenders and Blenkhorn [274].

Bennis et al [275] stated that as a result of integrating processes, "even if the total number of employees does not decrease, the increase in scale and acceleration of development will still mean a significant change in all management positions. Now all unsuitable appointments made in the past, all merely nominal functions, all those who have been shunted into sidings or 'kicked upstairs' into harmless positions will be revealed." Fear of losing one's position in distinctly bureaucratic management hierarchies provides sufficient incentive to impede otherwise successful supplier development. Antithesis of this fear is proposed by Deming in his fourteen points. Two tactical approaches to this are exemplified by Nissan's lifetime employment promise and Rover Group's 'job for as long as you want it' policy.

Womack and Jones [276] identified the crucial role of change agents, that are "the catalytic force... generally (being) an outsider who breaks all the traditional rules, often in a moment of profound crisis". Womack and Jones suggest the change agent will likely succeed provided the organisation does not actively sabotage the efforts or ignore them due to 'organisational lassitude' in response to implementation fatigue or the empire-building efforts of technocrats. Two elements for success they suggest are that 1) the change agent would be required to assume a beneficent despots (or kindly tyrant) style for approximately five years, and 2) a consensus amongst the participants that everyone will be treated fairly in the new system.

Beer, Eisenstat and Spector [277] are critical of change programmes being overlaid on existing organisations that do not attend to fundamental processes or the fabric of the organisation. Shapiro [278] highlighted evidence suggesting frequent introductions of latest improvement or development initiatives, by senior management in a process she calls 'fad surfing', leads to implementation fatigue. Brandon and Morris [279] recognised this phenomenon and offer a prescriptive solution in line with reengineering [280, 281] analysis to clarify tacit assumptions that form the barriers to implementation. In discussing fads Rhodes [282] suggested "the problem is not the fad but the faddish approach: proceeding without a proper understanding of the implications, uncertainties or prerequisites. ... Any new idea must be evaluated for its suitability to context ... Companies cannot avoid having a strategy in the sense that, while they trade, they must be conscious to some extent. The challenge is for them, and us as individuals, to increase the level of consciousness". Two elements of this consciousness seem apparent: awareness and perspective horizon [283]. The tenant behind the interpretations matrix is complies with Rhodes' perspective that the ideas are evaluated for suitability within their context by identifying various levels of Target.



'Honda BP' change agents at TRW in Mexico [284] overcame similar reluctance and implementation fatigue in the Rocio example. The change agents actively listened. By rooting around in scrap piles for usable materials they rapidly implemented quick fixes to employees' work station aesthetic 'hygiene problems' [285]. This demonstration of responsiveness subtly altered the psychological contract between Source and Targets by ensuring the originator of ideas was identified and peer congratulated. This formed the primer for rapid spread of rumours by the informal network within the business and subsequently lead to a reappraisal of the change agents by the Targets. The net effect in the example was a cultural re-adjustment and renewed motivation to contribute ideas.

Schaffer and Thompson [286] argued the merits of continuous incremental improvement, suggesting:

- Material and process changes are introduced as they are required,
- That a Darwinian process based on empirical testing reveals what is effective,
- That frequent short term success motivates, and that
- By undertaking analysis, diagnosis and managing change, employees develop the skills required to sustain the initiative.

Schaffer and Thompson summarised six reasons why activity centred change programmes fail and they promote result driven approaches:

- Activities are not linked to specific results.
- A company wide programme lacks focus, and change would likely have happened without the initiative based on demand driven forces.
- Managers are accused of short-termism.
- Programme driven measures confuse activity with results.
- The initiatives are based on the principle 'one solution fits all', and are driven by external specialists or consultants rather than the operations manager.
- Lessons are not learned because the effort is based more on compliance to dogma than comparing performance to goals.

They also identify four practical guidelines for implementing organisational improvement successfully:

- Each organisation should set short-term goals.
- Periodically review progress to capture lessons to learn and reformulate strategies accordingly.

- Discard inefficient processes and practices, and institutionalise the rest.
- Identify crucial business challenges and create the context by sharing vision and direction for future change.

Combining the work of Kao [287], Hampden-Turner [288], and Stalk et al [289], provided the following general guidelines:

- Aim for structural simplicity
- Clarify sources of competitive advantage (O’Laughlin et al [290])
- Commission parts of the organisation to identify and analyse the business environment for competitive advantages.
- Ensure the efficiency of core processes.
- Develop human resource management as the company gets bigger.
- Develop the leadership style by adapting to the changing environment and organisational structure.

A significant piece of research focuses on the recipients of supplier development initiatives. The United States' National Research Council's (NRC) Committee on Supply Chain Integration identified characteristics of successful small and medium-sized manufacturing enterprises (SMEs) [291]. The committee suggested SMEs:

- Choose customers carefully
- React appropriately to salient events that can define success or failure
- Establish strategic alliances and partnerships with customers and suppliers
- Cater to customers' needs
- Focus on quality
- Treat employees as valuable assets
- Select and monitor manufacturing processes
- Use the Internet for business communication and education
- Share information with supply chain partners.

The Committee on Supply Chain Integration argues customer companies carefully select targets for supplier development based on performance metrics and recognise the inherent resistance demonstrated to proposed change. The committee "emphasises that each SME must carefully assess its own circumstances in the rapidly changing business environment, identify gaps between supply chain requirements and its own capabilities, and find ways to fill the gaps". They go on to state that "based on a thorough analysis, each participant (SME) should then develop an internal business case for participating in particular supply chains

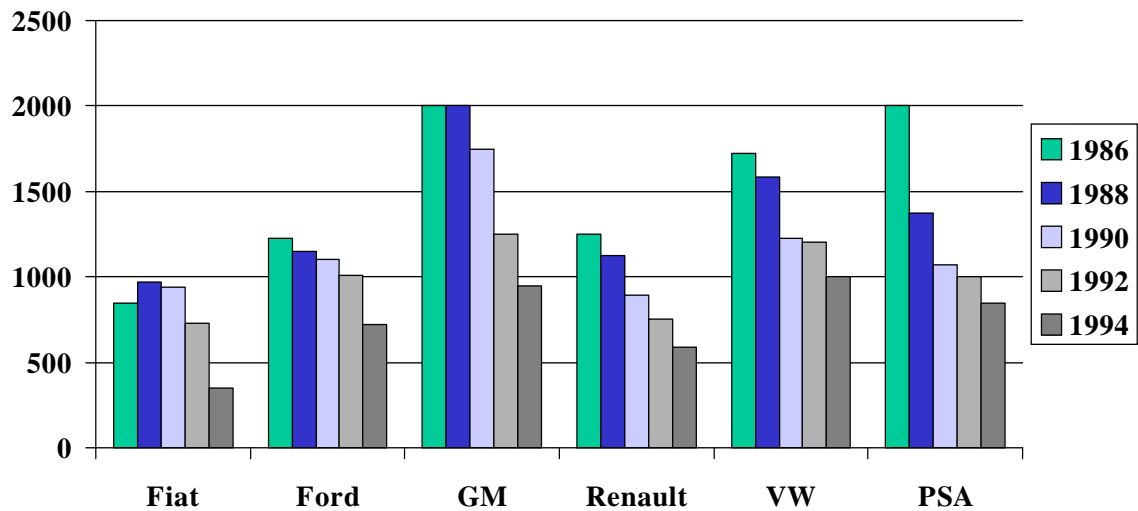
and decide, ... the extent to which they will integrate with their customers and suppliers". To use a metaphor, the committee suggested that one can lead a horse to water, but can't make it drink, and that the horse would find its own water if it wanted, though not necessarily that on offer by those that would wish to provide that opportunity.

The NRC's evidence that SMEs carefully choose their customers corroborates Leenders and Blenkhorn's and Carlisle and Parker's perspectives that customers have to sell themselves as worthy of receiving goods and services from their suppliers. This raises self-analysis questions such as *how good are we as customers?* and *are we easy to do business with?* Such an approach is suggestive of strategic level analysis using the Johari window [292]. The NRC report also provides balance to Handfield et al's remarks on the difficulties present in producing recognition, procedural and substantive agreements during the negotiation phases of a supplier development initiative.

Given that supplier development is designed to make the manufacture of saleable products more viable, it may be perceived as a value-adding activity. The principal objective is to create competitive advantage by raising performance levels through structured programmes. Performance improvement objectives include increasing quality and delivery reliability, reducing cost and new product development times [293]. A major issue for the designers and implementers of supplier development initiatives is long term dependence on the Source or change agent.

Many first tier suppliers for automotive and electronic goods supply chains, have subsequently served as facilitators of supplier development to lower tier suppliers and raw material producers. These suppliers become showcase examples of performance levels and customer focused operations that can be achieved. For this tiering to be successful, a contention is that it is necessary to create a climate in which the recipients of the training are motivated to participate in the formal events. The principal objective of any preconditioning

sessions therefore should be to empower individuals and businesses to be able to develop autonomously by implementing agreed strategies and principles.



**Figure 4.7 Number of automotive suppliers for various years (KPMG)**

Even though the automotive and electronic goods sectors have pioneered co-operative supplier development, traditional/adversarial price-based contracting remains a valid purchasing practice for commodity items and goods manufactured by transferable technologies [294]. This is especially evident at lower tier levels where open competition for contracts remains the norm. As shown in figure 4.7, the majority of the automotive assemblers are reducing their active supplier base to the minimum [295]. They select specific suppliers that have a long-term close strategic role to fulfil with the assembler-company and focus on their core competencies. A common objective amongst leading proponents of supplier development initiatives is the creation of competition for a bigger percentage of their business [296]. Perversely to popular understanding, a high failure rate for supplier development is considered as a purchasing success since this justifies deselecting suppliers. Deselecting suppliers though also serves to increase the importance of relationships with successful suppliers. [297, 298]

From OEMs perspective as the co-ordinator of the value adding activities, they can specify

1) from which suppliers' specific goods and services must be sourced and 2) the price to be

paid [299] as depicted by Newlands and Southey in the first two exhibits of appendix 6. This approach creates motivating forces in the interim suppliers to increase effectiveness and efficiency, since they are only paid for the conversion or sub-assembly procedures. It therefore becomes imperative for these companies to add value in other ways. Typically these are by providing value adding creative services, e.g. design, modifications, prototyping, process technology research, lower tier supplier training and auditing or benchmarking [300].

The core objective of customer's supplier development initiatives is to reduce the unit price through cost reduction. This draws attention to the value adding process. Key to increasing value add and reducing non-value-adding-waste are simplicity, reliability, ease of maintenance, maximum flexibility, lowest possible lead time, responsiveness to volume ramp up and turn-down, and superior quality.

Conventional supplier development tends to be the formalised strategy for implementation of improvement and development from one company to another in the supply chain. These initiatives are developed and implemented with the objective of improving the suppliers' capabilities and performance levels. In effect, the customer company is the source of knowledge, motivation and facilitating resources for the initial programme. All attributes and aspects of the supplier business are possible targets for review during the initial phase of supplier development.

The principal driver(s) behind the range of approaches to supplier development varies significantly [301]. Recognised drivers include:

- performance measurement and qualitative audit selection,
- strategic selection based on expenditure,
- supplier base reduction,
- co-operation and motivating input from suppliers,
- technological leadership,
- monopoly source leverage,
- quality kaizen (continuous improvement) and kaikaku (opportunities for stepped or very rapid bursts of improvement)

- costs - waste, failure and detection,
- delivery reliability and lead times,
- innovation,
- product features,
- volume capacity,
- speed of capacity ramp-up and turn down,
- flexibility - product changeovers and modular component designs,
- productivity,
- staffing level reductions,
- absenteeism reductions
- co-ordination,
- long term stability,
- 'green' manufacturing and recycling, particularly ISO14000.

Each principal driver contributes values, objectives, strategies, tactics and implementation initiatives to the customer-supplier relationship.

From the supplier development examples collected, no single driver or approach to supplier development has been found to be dominant. Total quality, however, is recognised by a significant majority of organisations. Only at the level of supply chain management (SCM) strategies and objectives, are there broad similarities between the recognised improvement and development paradigms. This is only possible due to the evolving nature of SCM. Ross [302] proposes the following definition for SCM:

Supply chain management is a continuously evolving management philosophy that seeks to unify the collective productive competencies and resources of the business functions found both within the enterprise and outside in the firm's allied business partners located along intersecting supply channels into a highly competitive, customer-enriching supply system focused on developing innovative solutions and synchronizing the flow of market place products, services, and information to create unique, individualized sources of customer value.

### **4.2.5 Supplier Development - Summary**

Various definitions exist for supplier development. These vary to suit the objectives of supplier development and are relevant to the trading environment and the paradigms in operation within which the initiatives take place.

To date, there still remains only a small core of widely recognised data specifically referring to the subject of supplier development. A search of supplier development literature reveals pluralistic scope to develop suppliers:

- Evaluating suppliers as a prerequisite to further supplier development activities [303, 304, 305].
- Providing feedback on supplier performance [306].
- Selling the concept based on future benefits [307, 308, 309].
- Greater information exchange through common interface platforms [310].
- Performance and capability enhancements made possible by investing directly in the supplier in exchange for raised performance expectations [311].
- Cultural and technological interchange by implementing tour of duty training and secondments [312].

The basis of these studies distil to seven principal elements:

- Identify and assess supplier's operations
- Providing incentives and inducements to improve performance
- Instigating competition among suppliers,
- The need to overcome resistance
- Working directly with suppliers, either through training or other activities
- Periodic performance assessment and audits.
- Information Technology infrastructure development and standard interfaces

Due to contemporary customer assembler's supplier development emphasis on substantive results, the people issues will likely either be used as a selection criteria or need to be addressed prior to the development team's arrival.

Existing supplier development (SD) specific literature does not distinguish between training, development and education for engineers, technicians, craft workers, semi- or unskilled labour. For such categories, different levels of assistance and syllabus will also be required to suite the stage of career and achievement of staff [313]. Contemporary supplier development models have tended to concentrate training on specific skills and techniques, transferred during supplier events designed to teach and stimulate both rapid cost savings and continuous improvements. SD specific literature does not examine issues of preparing to teach [314], preparing to learn and change as a result of feedback, or skills required by the change agent [315, 316]. Additionally, internal dynamics of the customer company,

especially direct operations teamwork for productivity [317], and management styles [318] are absent. The surveyed literature does not identify any specific companies that are statistically shown to have a very effective procedural methodology that increases the rate of supplier participation and scope of development work. Hypotheses this research has not discounted are that to reduce resistance:

- The approach and negotiation to implement supplier development would be supported by suppliers' visiting best practice 'show case' examples of suppliers already assisted by the customer, alternatively
- Other developed suppliers' representatives provide encouragement and support to as yet undeveloped suppliers, or that
- The negotiations are undertaken at a neutral site or at the customer's premises.

In the next section of this literature review, focus shifts to the knowledge transfer and creation processes present during training and subsequent development and learning.



### 4.3 Training, Development and Learning

Brown et al [319] categorised training, development and learning by facilitator and time horizon, shown in table 4.1. The classifications by Brown et al are focused on shop floor employees. Alternate focuses are self [320], management [321] teams [322], and the individual [323, 324], regardless of organisational role [325].

**Table 4.1 Variations on Organisational Emphasis and Key Workers (Brown et al)**

TIMESCALE	FOCUS	KEY PERSON & TYPE OF PROVISION	
Short-term	Training	Trainer	Provides job-specific skills
Medium-term	Development	Supervisor	Organises planned training and development activities
Long-term	Learning	Worker	Embarks on his/her own planned programme of continuous learning

Bennis et al [326] suggested four major approaches that can be used to develop individuals' understanding of their potential and how it could be applied to achieve full career and organisational growth.

- Direct mentoring between a manager-once-removed and the individual.
- Coaching to explore and understand all the subordinates' roles and highlight strengths and weaknesses.
- Imparting knowledge by teaching to individuals in lectures, seminars, discussion and practice.
- Training by using newly acquired knowledge on the job or in learning simulations to help individuals develop or enhance skills.

While partnership sourcing is regarded as organisational behaviour, supplier development by contrast provides agents of change with procedures and a curriculum of transferable competencies and skills. Interpersonal skills change agents likely would need are discussed

by Fisher and Ury [327], and Fisher and Brown [328] which described philosophical attributes to guide individual's behaviour during negotiations. This is complemented by Walther [329] and Berry [330]. Part of individual's ability to manage is to understand one's personality [331], management-styles [332, 333] and learning-styles [334, 335].

#### 4.3.1 Training

Occupational skill training initiatives can be categorised as:

- Off-the-job training under full-time supervision in a special area away from production facilities, following properly designed syllabus
- On-the-job training under supervision in a production area
- Semi-supervised on-the-job training by 'sitting with Nelly'. (This is generally discredited as a training method.)
- Use of projects and departmental assignments
- Use of external training organisations. This includes supplier development staff training activities sponsored by customer organisations and training consultancies.

Training for occupational skill acquisition was boosted by the Industrial Training Act 1964, empowering training boards to charge a levy to firms based on either number of employees or the amount of pay role [336, 337]. Participant firms received cash-back grants based on quantity and quality of training provided. The act had three main objectives:

- To ensure an adequate supply of properly trained men and women at all levels in industry
- To secure an improvement in the quality efficiency of industrial training
- To share the cost of training more evenly between firms.

Finnigan [338] identified line manager, training specialist, and industrial representative roles of a training manager, and that training strategies are "clearly called for and the form of strategy must be conditioned by:

- The organisation
- The line manager's attitude to training
- The receptiveness of individuals to the need for training
- External factors such as the ideas of co-operating academic institutions and industrial training boards
- The training manager's own attitudes, hunches, fancies and prejudices" [339].

Brown et al [340] categorised training as a short-term provision of specific knowledge, usually provided by specialists, with the aim of rapidly achieving a foundation of common skills. Training is focused on supporting business strategies by providing appropriate input or conversion skills and techniques. Training needs analysis (TNA) is a process of comparison between desired characteristics and attributes of ideal candidates to fulfil a role and current abilities of available individuals [341]. This is somewhat reflected in figure 4.3 by Hahn et al. Once an initial TNA has been undertaken, management nominally determine an optimum sequence of standardised training packages delivered in seminars [342, 343]. Training is the application of knowledge, which can be cascaded down through a business and extended through supply chains by training trainers. Typically, this knowledge will be formatted for rapid understanding and assimilation [344]. Training provides specific job and people skills [345], for which companies would reasonably expect significant returns on investment [346].

Kirkpatrick [347] is recognised by the Institute of Personnel and Development as a standard by which to assess training, development and learning. Kirkpatrick's evaluation criteria are:

- **Reaction** (concern about mistakes made, feelings including apathy and excitement, situation dependent reactions - alarmist; intellectual inquisitiveness; route cause driven and solution driven - isolated cause and effect, systemic analysis)
- **Learning** (increased understanding, acquisition of skills, capabilities and experience)
- **Job behaviour** (synchronisation, efficiency, effectiveness)
- **Organisational effects** (results, product and service popularity - increased sales, stability and predictability) and
- **Ultimate value effects** (results, key performance indicators, competitive advantage, growth)

Kirkpatrick suggested paper-and-pencil tests before and after seminars, and assessing individuals feedback on intrinsic and extrinsic perceptions using forced agree/disagree questions. A significant conclusion reached by Kirkpatrick is that favourable reaction to programs *does not assure* learning has taken place. A grid therefore can be drawn to

illustrate the value (in terms of completeness) versus reactions or quality of presentation to categorise and compare various initiatives. An alternate assessment tool for joint analysis between customer and supplier is the Gartner Group's [348] matrix evaluates completeness of vision against ability to execute.

Wickens [349] depicted four sequential levels of ability used to grade Nissan employee's abilities and competencies, in figure 4.7. These levels of ability are related to quality and time, and therefore contribute to cost reduction, quality, efficiency and productivity.

Employee \ Task	1	2	3	4	5	6	7	8 - 20
Ian Smith	☐		└	☐			└	
Peter Brown		☐						
Mike Jones						└		
Ron Watson	☐		└	☐	└		☐	
Jill Roper					☐			
Frank Giles		☐	└					
Mary Wilson					└		☐	
Kevin Cope						☐		
↓ 20								

Code: Tasks can be performed  
 | To the right quality  
 └ Quality and in the standard time  
 └ Quality, standard time, can train others  
 ☐ Quality, Standard time, train others and trouble shoot/improve the operation

**Figure 4.8 A Nissan Skill Matrix (Wickens)**

### 4.3.2 Development

Training relates to acquisition of defined techniques to fulfil a specified role. In this perspective, there is a metaphoric 'glass ceiling' that forms a boundary to the role. Roles are an extension of scientific management, that perceived elements of a company having defined activities and purpose, and whose interactions could be defined, formalised and standardised [350]. Development by contrast relates to job enrichment and expansion. Development infers iteration and expansion, progress and advancement. Targets for development include

individuals, groups, sub-groups and businesses [351]. Heirs and Farrell suggested change agents, or Sources of development are best served by introspective analysis in order to identify the current state and subsequently the requirements Targets must fulfil as a result of the initiative:

"The manager responsible for conducting decision-thinking performance - be that his own or that of his organisation - must therefore start with a sound and shrewd assessment of his own thinking abilities. Only if he knows his own thinking strengths and weaknesses can he start to build upon the former and, as far as possible, remedy or compensate for the latter. Only when he understands where his own talents lie can he look around for the indispensable talents that will balance and complement them. And only after he has assessed his own skills as a manager, motivator and assessor of other people's thinking efforts can he set about improving those skills" [352].

Heir and Farrell related the 'not invented here' phenomena to Japanese industrial emulation of Western industrial practices following cognitive behaviour modifications [353] that originally were based on a national psyche that all foreigners and extraneous methods were intrinsically inferior.

#### **4.3.3 Learning**

Henry Ford contended that learning occurred in the organisation, so that experiments that had not worked in the past would be recalled by the collective memory. Ford assumed that the cumulative knowledge of all previous experiments would lead to an exhaustive list of what could not be done, leaving no discernible opportunities for examination. This perspective heralds to learning organisations and organisational learning [354]. Ford advocated pro-rata compensation, stating:

"If an employer urges men to do their best, and the men learn after a while that their best does not bring any reward, then they naturally drop back into 'getting by'. But if they see the fruits of hard work in their pay envelope - proof that harder work means higher pay - then also they begin to learn that they are a part of the business, and that its success depends on them and their success depends on it" (Ford, 1924:117-8).

Henry Ford [355] also advocated not writing down practices and experiments already undertaken. By contrast, the quality standard ISO9000 series accentuate explicit documentation of standard operating practices and QS9000 emphasises quality tools and statistical process capability measurement to achieve significant yield based on product design tolerances.

Argyris and Schön [356] developed single- and double-loop learning. Single loop learning compares actual states of variables against governing variable limits and determines error. Double-loop learning adds a feedback loop to allow for the governing variables to change. In effect, double loop learning is the fourth level of Wickens' employee skills, shown in figure 4.8. Imai, Nonaka and Takeuchi state:

"Everyone participating in the development process is engaged in learning, even outside suppliers. Learning also takes place across all phases of management and across functional boundaries. It is this kind of 'learning in breadth' that supports the dynamic process of product development among Japanese companies. This learning emanating from the development process, in turn serves as the trigger to set total organisational learning in motion. In this sense, new product development is the particular device that fosters corporate-wide learning" [357]

Learning at individual and organisational levels is linked with competitive advantage [358], trust in intentions and competence [359], exploring individuals margins of freedom that form a source of uncertainty and games for colleagues, the organisation and other enterprises in the supply chain [360], through innovation [361] and improved management [362]. The decision to learn occurs at different levels of organisations at different times [363]. Attitudes of people in the organisational scenario play a considerable part in the maintenance of individual's commitment to learn [364, 365].

Stiglitz [366] hypothesises: "Just as experience in production may increase one's productivity in producing, so experience in learning may increase one's productivity in learning. One learns to learn at least partly, in the process of learning itself." Neural linguistic programming (NLP) categories individuals into auditory, visual and kinaesthetic types [367,

368]. In learning settings, it is advisable to match the medium to the recipient [369]. Calder et al [370] identified deep and strategic level learning, and surface learning as being present in their sample of British industrial organisations and further education colleges. They identified that FE colleges focus on learner's potential and specific qualifications while in-company training focus on preparing and inducting employees into specific jobs and improving performance. In Calder's study, responding in-company courses did not normally use the concept of passing or failing.

Collis [371] and Grant [372] conclude that business strategists recognised the ability to learn faster or 'better' than competitors may alter the competitive advantage relationship between organisation's goods and services.

Myers Briggs Type Indicator (MBTI) is the source of a balanced strategy for work definition that uses all eight participant preferred styles: extroversion versus introversion, sensing versus intuition, thinking versus feeling, and judging versus perceiving, [373]. The strategy has seven steps:

1. **Define the problem** by using sensing perception to see it realistically. Avoid wishful thinking.
  - *Sensing Questions*
  - What are the facts?
  - What exactly is the situation?
  - What have you or others done?
  - What are the bottom line realities?
  - What are my resources?
2. **Consider all the possibilities** by using intuitive perception. Brainstorm. Don't leave out a possibility because it doesn't seem practical.
  - *Intuitive Questions*
  - What are all the possibilities?
  - What might work?
  - What other ways are there to look at this?
  - What do the data imply?
  - What are the connections to other issues or people?
  - What are the patterns in the facts?

3. **Weigh the consequences of each course of action** by using thinking judgement. In a detached and impersonal way analyse the advantages and disadvantages of each alternative. Make a tentative decision about what will give the best results.
  - *Thinking Questions*
  - What are the pros and cons of each option?
  - What are the logical consequences of each option?
  - Is this reasonable?
  - What are the consequences of not acting?
  - What impact would this have on my other priorities?
4. **Weigh the alternatives** looking at the impact on people by using feeling judgement. Use empathy to put yourself into the situation.
  - *Feeling Questions*
  - How does each alternative fit with my values?
  - How will the people concerned be affected?
  - How will each option contribute to harmony?
  - How will I support people with this decision?
5. **Make a final decision**, consciously, on your best course of action. (Judging)
6. **Do it!** Act on your decision. (Avoids the danger of procrastination associated with 'perceiving').
7. Evaluate **the decision**. Was it a good one? Did you consider all the facts, possibilities, impacts, and consequences? If you are satisfied, keep on. If not, rework the steps. You may have new information; the situation may have changed; you may see consequences you didn't anticipate; or your values may have changed. (Perceiving)

This balanced strategy also is in line with Deming's plan, do, check and act cycle.

#### 4.3.4 Group Facilitation

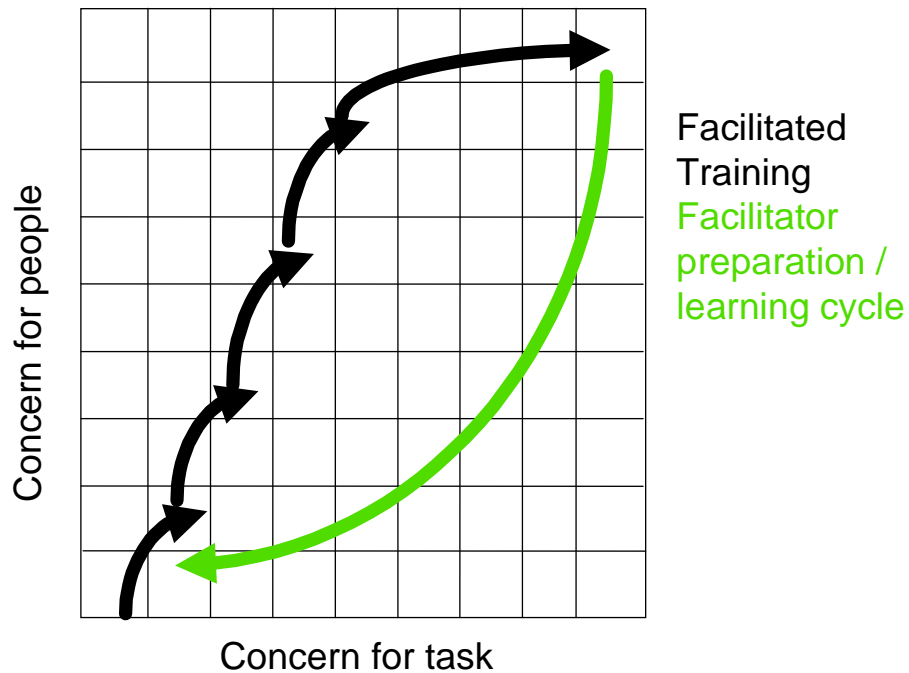
Heron [374] provided guidance on preparation, delivery and evaluation of training materials based on joint content agreement with the client. By contrast, Chalmers [375] focuses on what the trainer can achieve in isolation. Odiborne [376] and Weaver and Farrel [377] examined how managers facilitate change and work.

Sheal [378] examined facilitators' roles and authority, charismatic presence, and treats the learner in an holistic manner. Sheal identifies an approach for transposing training centre practices to the workplace and relates this to creation of individual and peer pressure to achieve results. Most significantly, Sheal advocates peer review audits within firms to set



quality and performance targets. In this respect, Sheal's concept is autonomous, self-directed and sustainable supplier development.

To achieve 9,9 on the grid by Blake & Mouton [379, 380], one hypothesis proposed is to start with a facilitator that has achieved an emphasis on both tasks and people. External parties that are not exposed to the detail associated with the scenario under examination are likely to be able to act as a chairperson. This role makes use of a balanced scorecard to ensure both aspects are reviewed, analysed and assists in the decision-making process as an ombudsman or arbitrator. The facilitator will be able to identify the focus of concern of the principal protagonist groups. From the starting grid, the facilitator likely will combine both concern for task and concern for people in defining a series of projects that form a programme of continuous improvement. Figure 4.9 depicts a facilitator changing perspective to assimilate a client's position on the grid. From there, each project is framed in a people oriented introduction to ensure recognition and procedural agreements. Only then, are substantive task oriented agreements reached and improvements implemented. This approach emphasises attitude, appraisal of current performance, and subsequently improvement via systematic training (reversing Barrington's model – starting with people, then tasks, in a multiproject environment). This can have an impact on employee perspectives by creating 'implementation fatigue' identified by Shapiro [381].



**Figure 4.9 Overlay of Hypothetical Facilitating and Facilitator Preparation Profiles on the Managerial Grid (Adapted from Blake & Mouton)**

Kaplan [382] identifies that development practitioners must have imagination, flexibility and the ability to work with ambiguity and contradiction; one which does not use rules, it relies on guidelines. Kaplan noted contradiction stemmed from a situation where "the people resisted change, yet were patently unhappy with their current state". The ambiguity emanated from a perceived imperative to develop, while questioning the correctness of implementing and facilitating development on Targets that were unwilling to accept the consequent changes.

The dominant model of supplier development is based on a business-to-business teaching and learning contract to improve the supplier's capabilities by transferring techniques and concepts. Johnson [383] perceived business success emanated from employees rather than the structure of the company. Wood, Barrington and Johnson [384] promoted an attitude of continuous development that is effective as the basis of skill and knowledge acquisition by individuals in a business environment.

Improvement values are culturally embedded into the organisation	Level 3 Attitude of Continuous Improvement
Based on measurement, feedback and control loops	Level 2 Appraisal Approach
Earliest and Most Basic Approach, Used as Formal Courses Structures	Level 1 Systematic Approach

**Figure 4.10 A Depiction of Barrington's Proposed Hierarchy**

Depicted in figure 4.10, Barrington [385] reviewed experiential learning [386] organisation's training packages and individuals attempts to learn in a supply chain enhancement context. This analysis was in conjunction with Adair's leadership model that identified group tasks, group harmony and individual happiness. Qualitative descriptions were exclusively used to trace the evolution of training processes through three stages:

- 'Systematic Approach' predominated in the 1950s. Managers define job descriptions – the activities undertaken and responsibilities. From this a job specification is created that details the skills and profile of the ideal candidate. Based on analysis leading to formal training plans that are implemented soon after new recruits join the organisation. The underlying proposition being employees will then be able to undertake the set of activities. The principal drawback of this method is that jobs and roles change over time due to external influences.
- 'Dynamic Approach' using employee appraisal interviews as the interface between business requirements, strategies and objectives, and performance improvement plans tailored to the individual. This level was developed during the 1960s and uses appraisals as the basis of training needs and career development. This stemmed from the view that a workforce as a whole was no longer competent and static job descriptions and specifications could not keep pace with changing business requirements.
- An approach that adopts 'continuous development' as the *attitude* that leads to integrating work and learning opportunities was developed in the 1970s following the fuel crises. The attitude stems from a philosophy that thinks positively about problems; viewing them as opportunities for learning. As Deming noted, this requires fear is eliminated from the working environment and punitive punishments are abandoned in favour of reward for effort and innovation. Continuous development does not rely on a trainer or manager to push learning experiences on to employees. Individuals themselves identify learning needs and are provided opportunities to decide how best to meet and exploit them. Continuous development is not a defined

process or clear set of techniques or tools. Continuous development is a philosophy or commentary on how business and management has evolved:

- From stability to dynamism
- From descriptions to objectives
- From systemisation to creativity
- From management command to participative decision
- From teaching to learning
- From training alongside work to learning within it.

According to Barrington, continuous development (CD) attitudes liberate individuals from a misguided dependence on an 'authority' that provides teaching and learning experiences. It allows workers to become self-reliant by providing tools and techniques that are widely applicable – employees might not know the answer. They are encouraged to ask: "How can I find out?" This type of learning is pulled by the 'front line personnel', those directly undertaking current value-adding work for the customer. In this environment, managers become facilitators, providing employees with resources to undertake learning activities that are requisite to innovative solutions. The CD approach emphasises the interrelationships between technical and personnel aspects of day to day operations, and also the need to develop in parallel the technology and competence of people.

Barrington combined five aspects of attitude are into the sixth – continuous development:

1. *Continuous enquiry* is an attitude which accepts that few things are ever 100 per cent right or wrong, good or bad, and that there are always new links to be forged between the past and the future. It accepts that learning is not all of one kind, and constantly searches for new meanings in any experience. It is *not* cynical about things that seem obvious, but is always ready to review them.
2. *Sensitivity* is an attitude that promotes links with whatever is happening around and about. It uses (and trusts) perceptive skills and faculties, and values the outside world (including the people in it) as important and valuable simply by virtue of its existence. It does *not* imply kindness, or a wish to help or serve, but it is always ready to accept what is there without taking a judgmental 'praise or blame' view.
3. *Authority* is an attitude which assumes the right or duty to think strategically for others. It accepts that decisions must be made, and draws on past experience and current knowledge in making them. It does *not* necessarily impose those decisions on the world, but it is always ready to propose a line of action and to present it as the 'best possible'.
4. *Confidence* is an attitude that assumes success – either because the relevant decisions are 'the right ones' or because they are backed by such a level of

commitment that the expected results are inevitable. It does not demand support from others, but it does assume that support will be forthcoming if it is needed.

5. Enthusiasm is an attitude that assumes what is happening is worthwhile and enjoyable. It finds satisfaction in problems and successes alike; it creates ways to communicate that satisfaction to others. It does *not* always report accurately, but selects those aspects of experience that can be praised and ignores the rest.
6. Continuous development is an attitude that assumes 'progress' – in the sense of movement towards a superior future. It draws on and balances all the other attitudes mentioned: having collected information and treated it with respect, it takes a strategic decision and assumes success, enjoying the prospect and communicating it to others, but still looking for further new experiences to produce new information and start the cycle over again. [387]

Barrington argues that when reading the above six points, if the perception is formed that these are idealistic, the reader is not displaying *any* of those attitudes described.

Shown in figure 4.11, Lamming [388] follows the same logic used by Barrington, and thus provides a quasi-supportive approach, using data from 129 interviews, to make the assertion that a majority of the qualitatively described attributes of the phases must be achieved sequentially.

All supplier development initiatives identified in this literature review conform to the systematic approach, with exception of the Honda BP initiative described in Nelson, Mayo and Moody [389], that emphasised quality circles to identify and correct workplace ergonomics and to stimulate ad hoc improvement suggestions. Honda BP approach used at TRW in Mexico most closely fits with the continuous improvement attitude by focusing on hygiene factors in the work place to stimulate and sustain motivation to improve. The Nelson, Mayo and Moody work does not contain a detailed process, though the TRW case supports the hypothesis of a preconditioning programme.

#### **4.3.5 Summary of Training, Development and Learning**

This section has reviewed elements of training, development, learning and approaches to their management. These are related to conventional supplier development. A balanced

strategy based on the Myers-Briggs type indicator is shown. Barrington's three stages are compared to a supplier development initiative.

Brown et al's training, development and learning model reflects the three levels highlighted by Barrington's hierarchy consisting of a systematic approach, an appraisal approach, and an attitude to continuous improvement. These similarly converge with Adair's leadership model that identifies the individual, groups and the task.

It was noted during the preparation of this thesis that philanthropic attitudes found lacking in supply chain and supplier development literature were reflected by the highest level of effectiveness in Barrington's model. Chapter 5 and appendix 1 describe research undertaken as part of this programme to initiate supplier development at the second of Barrington's levels. Chapter 6 focuses on an assembler's supply chain that was thought to be attempting to move to the attitude for continuous improvement level.

#### **4.4 Chapter Summary**

In contemporary supplier development literature there is a distinct lack of any consideration of learning styles, approaches to training and long-term development of individuals, sub-groups or teams. One must search specialised literature for guidance on implementation issues that are an essential part of relationships between facilitating agents from customer companies, supplier facilitating and co-ordinating staff, and direct process employees working to produce goods. This thesis concludes that procedural guidelines developed by Hahn et al [390], and Handfield et al [391] predominantly apply to indirect preparatory activities by purchasing participants, and that guidelines for the implementation of training and learning events are most noticeable in supplier development literature by their absence. This is intriguing since suppliers also are assessed on the human and managerial aspects of

their businesses. This research concludes that direct supplier development activities correlate to learning, teaching and innovative interaction between the participants.

Supplier development training initiatives attempt to redress the shortfall of technical education in schools, colleges and universities. Given the supplier association system, such networks seem ideally suited to sponsor generic industrially oriented academic courses, such as the Jaguar Masters programme at Coventry University, and provide additional specialist learning opportunities for employees, especially on 'train the trainer' courses.

## Chapter 5

# Development Research with a Collaborating Company

‘When we know ourselves and our enemy, we have already won.’

Sun Tsu

### 5.1 Introduction

This chapter describes iterative prescriptive and corrective action research work undertaken with the first collaborating establishment. Buyers from two major final assembler customers put M E Ltd on notice that they would be targeted with improvement initiatives, to start 18 months after the start of this research. Each corporate customer had a range of standard training packages forming their supplier development courses. A lack of knowledge of the courses was reported as the source of M E’s management apprehension. This provided the motivation to approach Coventry University for assistance to prepare prior to the formal supplier development initiative. The company anticipated using an appraisal-based approach, which is the second level of Barrington’s hierarchy.

Pro-activity in this action research focused on analysing alternatives and facilitating the decision-making process on which to use. Research was undertaken as an external facilitator. This approach kept a strategic perspective while management were involved in the detail and avoided being perceived as taking sides. This had the benefit of creating the role of ombudsman with the core group as protagonists.



## 5.2 Collaborative Research with M E Ltd.

For reasons of confidentiality, the name of the collaborating establishment has been disguised as M E Ltd and names of employees have been withheld with the exception of Alison Davis, at that time the Personnel and Administration Manager.

This research analysed the organisation scenario, relationships and employee behaviour observed and reported to be present within M E Ltd. The work considered whether and how to change these into modes conducive to the introduction of final-assembler formal supplier-audit, appraisal and development schemes. The work was based on Schein's [392, 393] process consultative approach to create a research relationship that was facilitated by M E Ltd's personnel and administration manager as primary contact person. This chapter addresses two objectives:

- To examine the internal dynamics of a rapidly expanding small to medium sized enterprise, and
- To identify inhibitors, barriers and likely Targets for change. Having identified these, to recommend, plan and facilitate implementations to enhance the customers' supplier appraisal score by creating a conducive environment at M E Ltd in preparation for supplier development schemes.

This research provided analysis and recommendations to key participants. Assistance was provided by analysing alternatives, their consequences and facilitating the decision on which to use. Introduced as a 'student' from Coventry University undertaking a project, interviews were conducted with a selection of employees at all levels of the organisation. To reduce apprehension during the implementation phase, subsequent analysis was provided based on frequently updated descriptions of the focus group's situations during after hours' consultative meetings. This partially became implementation by *remote control*. The strategy, based on acting as an external facilitator, liberated time to develop further plausible solutions and strategies for the participants and assess likely responses by analysing the scenario's and response strategies likely to be used by key players. This approach is essentially Taylorist [394], though avoided a supervisory perspective and promoted a friendly old sage,

ombudsman or honest broker image. It also allowed the participants to go about their business with an agenda, though without the visible Source of the initiative being present that likely would have caused resistance as a result of perceived intimidation, fear or other behavioural response.

Exit strategies were consistently proposed based on ending each action research project with either:

- 1) The resolution of the requirement or situation and the customer/supplier relationship becoming self-supporting, or
- 2) The client had been provided sufficient direction to extend the project.

### **5.3 Initial Contact**

As an M E Ltd representative, Ms Davis approached the University through contacts seeking guidelines on how to manage that company's changing requirements. Ms Davis had no executive power to implement corporate strategies, yet was head of a middle management departmental function - Personnel and Administration. Ms Davis had three salaried subordinates and they all worked on average between fifty and sixty hours per week. This situation motivated a request for assistance from Coventry University in developing practical solutions for implementation at that level in the organisation. This request provided an opportunity to conduct a social quasi-experiment based on win-win strategies [395, 396] used in negotiation guidelines [397].

### **5.4 Company Survey**

A company-specific survey for M E Ltd was undertaken to gather current-state data, to assess the internal 'feeling' within the company. The senior managers approved two versions of the questionnaire, one for staff, the other for shop floor employees. Results showed a lack of

internal communication, feedback, low morale and lack of commitment to the company. The survey and interviews described in Appendix 1 provided an opportunity to review M E Ltd against its customer's espoused model of best in class suppliers. The survey was a current state analysis that focused on employee perceptions. Questions were forced compliance type with the exception of an open request for comments. Two versions of the questionnaire were produced, one for staff, the other for shop floor employees. The objective was to obtain feedback whether the company employees and staff would accept or reject an appraisal based performance review system. Base line questions were asked about the feedback, amount of appreciation shown by more senior members of the company, knowledge of the business objectives and strategy. Results were cross-referenced based on length of service and by staff or employee.

The results showed managerial style at that time did not support people oriented supplier development initiatives or world class performance. A positive attitude was collated, showing a majority of both staff and shop floor employees favoured appraisal schemes. Significant qualitative comments were obtained and analysed. This provided the justification to recommend the company aim for Investors in People registration prior to starting supplier development with assembler customers.

Phase two of the research focused on the internal supply chain within M E Ltd.

## **5.5 Phase Two Research**

Acting as an independent external adviser, data was related during after-hours consultative sessions [398]. Data was gathered concerning problems, the nature of the participants' attitudes, role-playing, sociability, organisational structure and focus. Communication routes, responsibility, accountability and authority areas of the internal systems, and approaches that were identified as not satisfactory were discussed. Route causes were defined and researched.

Strategic solutions were subsequently presented to the representatives responsible for resolving them. The offer to change, appropriate strategies and plans of action, appeared to come from internal staff, who were effective as internal *communication nodes* between workers and operations directors. This approach avoided the standard requirement to gain commitment from M E Ltd top management. The 'middle up-down' approach as described by Nonaka [399] for learning organisations is similar to this approach.

This research was undertaken from a process consultative perspective to prepare M E Ltd for supplier development. Primary activities undertaken were:

- Gaining an understanding of the company's products, manufacturing strategy, and business structure.
- Directing a study conducted by the company to identify its own problems, challenges and opportunities. In so doing, imparting self-supporting learning, problem solving, relationship analysis and negotiation skills.
- Providing M E Ltd with their customers' explicative and procedural supplier development documentation. These were jointly analysed to extrapolate the customer's expectations likely to exist at the time of the re-audit.
- Providing consultation services including causal analytical support, alternative strategies, recommendations and project planning services. Recommendations were made to increase day to day feedback for all levels of employees, and to encourage managers and supervisors to appraise personnel on an informal basis.

## **5.6 Current State Analysis at M E Ltd**

### **5.6.1 Assembler's Initial Audit of M E Ltd**

The customer assembler's audit instrument concentrated exclusively on substantive manufacturing performance metrics. Criteria for assessing management and internal dynamics were not included and hence not assessed during the first audit. Senior managers at M E Ltd stifled rumours about the presence of an auditor that was undertaking a supplier appraisal survey, by stating that the auditor was a 'student' on placement as part of an academic course. The University identified the student was a Senior Purchasing Manager for an automotive assembler. Both the auditor and senior managers at M E Ltd used an almost submissive, yet cordial, approach during the first audit. This situation allowed for a degree of 'benefit of the doubt' to

creep in to 'fudge' and 'massage' perceptions. This gave rise to an elevated supplier rating, which at that time was acceptable to both parties. As a result, no action was taken to initiate training at that time or insist upon objectives and improvement targets other than those stated in the assembler's own literature (which the auditor assumed, incorrectly, the supplier was familiar with). Since this audit was early in the first round of their supply-base auditing programme, it was concluded that at that time the auditor, whom was working directly for that assembler, was relatively inexperienced at supplier appraisal.

### **5.6.2 Dynamics of a rapidly expanding SME**

M E Ltd was taken-over by a competitor based in a continental European country. The parent company subsequently seconded two executive operations managers for two years to M E Ltd. Their aims were to make the business more competitive and reinforce the links to the parent company. The deal was based on up-front investment to develop the business. Increased competition from alternative competitors' products was the company's driving force for change. One assembler customer had audited M E Ltd prior to the project and rated them as satisfactory. They focused change on two aspects: 1) the adoption of new computer systems, and 2) an increased focus on daily operations in order to meet delivery requirements. Culture change and staff development programmes were not included in the plan.

M E Ltd was also attempting to move from its original site (consisting of five separate units), to a new larger site, however the volume demands required expansion to occupy all available space. M E Ltd management were endeavouring to cope with just-in-time order fulfilment from the UK to Germany. These every-day fire-fighting activities occupied management's attention including frequently arranging for members of staff to fly to the assembler in Germany with parts in order to fulfil volume requirements. Operating at two sites divided the seconded managers' attention. They became involved in day to day kanban order filling at the expense

of strategic change planning and control. Neither instructions nor feedback were exchanged directly between management and the work teams. Instead, messages passed via the administrative part of middle management.

### **5.6.3 Recruitment Drives and Induction Training**

To fulfil contracts for one British and one German automotive assembler, M E Ltd was having a recruitment drive to hire workers. One of these assemblers two years previously switched suppliers to a lower price competitor until that supplier had to ask for a price rise to stop making the components at a loss. The other assembler had made a decision at short notice to switch the component sets from premium low-volume luxury items to high-volume standard equipment. Coping with assembler customer stop-start new product launch 'jitters' and supplier changes to take advantage of lower unit prices induced major shop floor employee recruitment drives, followed by layoffs and re-recruitment.

M E Ltd experienced shop floor number fluctuations between 120 and 320 employees during the period of this research. The number of full and part-timers stabilised at approximately 250 with some seasonal variations. This was in a context of predicting worst case scenarios of closing down or increasing to over 500 employees during their boom. The number of staff remained at 21 throughout these changes.

Prior to July 1994, new workshop recruits learnt how to do the work by the discredited 'sitting next to Nelly' approach. This is in line with what Reid and Barrington [400] identify as the main descriptors of British industry training perspective. In July 1994, a policy was established to give all new recruits at least six hours of intensive training prior to commencing work on the shop floor. Team leaders held sessions during non-productive hours, when they had the time to teach. Such sessions tended to occur either in the evening after the second shift or on Saturday

afternoons. The new scheme proved to be very popular with both new recruits and their team leaders.

Internal politicking based on the operations manager (internally called 'The Bear') getting the managing director to pull rank created a situation where the induction and basic training programme was bypassed. The requirement to achieve volumes to supply the product ramp-up created an imperative to put new recruits to work immediately. The Bear repeatedly reinforced this imperative for example by aggressively stating 'We need forty to start Monday!' with an overbearing manner and colourful expletives. As a result from September 1994 prior training no longer was provided. Despite good intentions and positively assessed results of the training scheme, priority was given to making product immediately rather than training new employees adequately for the positions. Training reverted to 'sitting next to Nellie'. M E Ltd's senior management defined two advantages of this approach:

- It is cost-effective and not time consuming for trainers.
- It is also very relevant to the actual job and therefore 100% transfer of skills.

It was postulated that this resulted in a much slower learning curve for new recruits and consequently lower productivity.

During periods of rapid expansion, the proportion of new recruits made the sitting with Nellie approach to training less effective. Minimal 'sitting next to Nellie' training also was identified as a contributing factor to increase the probability of new employees leaving the company during the induction crisis period. This had the opposite effect of the original intention of foregoing the training to increase employee numbers as rapidly as possible.

Once employees reached an acceptable standard, operations management considered workers did not to require any further training unless there was a potential shortage in another section. In this case, the 'sitting next to Nelly' approach again would be used.

Based on this evidence, and other reported instances, it was concluded that internal ad-hoc rules were in use by M E Ltd management, staff and workers. These rules prevented any group or individual from accepting responsibility and accountability for decisions or actions.

#### **5.6.4 Conclusions from the Current State Analysis**

The internal survey and interviews, described in appendix 1, and the identified recruitment and training issues provided sufficient evidence of internal issues that it was deemed necessary to address M E Ltd's people issues prior to the re-audit or technique based supplier development programmes. A scenario became evident resulting from the employment of a theory-in-use based on a blame culture, the maintenance of self-supporting behavioural modes and indirect communication routes. The rectification or alteration of this scenario became the focus of this case history.

Research work involved consulting with the Personnel and Administration manager and her team (henceforth 'the focus group') to create and implement a pre-development conditioning programme to enable the supplier's senior staff to develop themselves, their subordinates, and work shop teams in the business.

A preliminary study was carried out on M E Ltd to gauge the ease with which assembler customers' supplier development team activities would be undertaken. It was concluded that fire fighting predominated and limited management resources would reduce the effectiveness and long-term usefulness to M E Ltd.

### **5.7 Internal Change Programme**

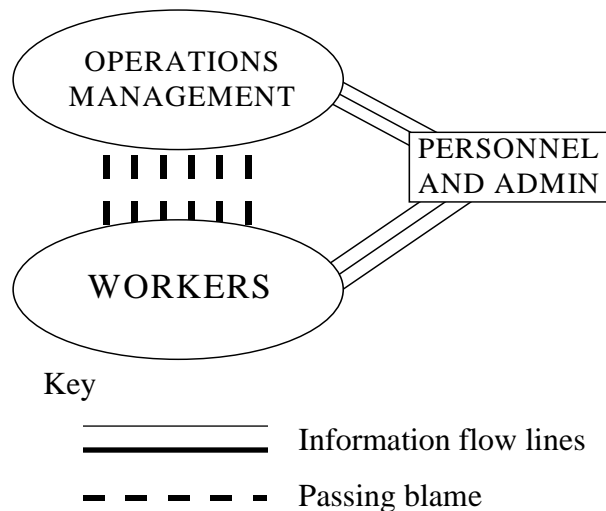
The project initially used arithmetic calculations based on how to reduce the unpaid overtime to a normal working week with an efficiency allowance showed it was advisable to double the size of the Personnel and Administration department. The desired consequence of this



liberated time was to encourage the use of staff's creative energies to identify opportunities and challenges, and develop their own solutions and implementation plans. The objective was to improve M E Ltd's internal operating routines by providing the focus group with strategies and tactical advice. By assuming a behavioural, moral and intellectual *high ground*, it was anticipated that the Personnel and Administration department staff would be able to stimulate change. The extent of that change would be determined by the momentum generated by involving the entire company and perhaps later their customers and suppliers.

Recommendations were proposed to the seconded managers to increase the administrative staff head count in a systematic manner to relieve the excessive unpaid overtime. It was proposed that this would eliminate overtime for routine work and provide sufficient resource availability to host or facilitate the assembler's development initiatives. The seconded managers agreed to initiate these changes. To reduce the recruitment, training and supervision workload, a recruitment strategy was chosen to employ one new staff member every six weeks until the department had sufficiently skilled staff to reduce the unpaid overtime. A bilingual management secretary and a purchasing assistant were recruited. The personnel and administration department originally consisted of four staff. A detailed training need analysis was carried out, and an annual internal skills audit planned. The Personnel and Administration department eventually grew to nine, releasing senior staff to resolve internal problems more effectively. By the end of this research phase, M E Ltd had 28 staff.

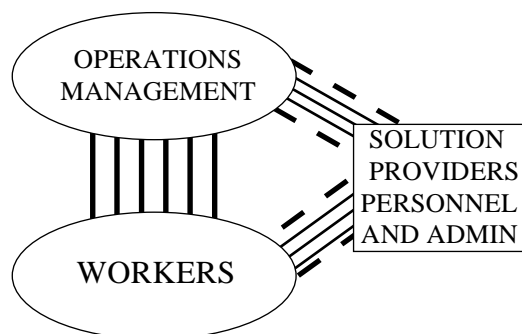
Senior management and workshop employees blamed each other, while not directly communicating. They sent messages to each other via the personnel and administration (P&A) department, shown in figure 5.1. [401]



**Figure 5.1. Internal Hard-Hard Blame Relationship**

The focus group at M E Ltd were aiming to achieve 7,7 on Blake and Mouton's managerial grid. This approach allowed management to emulate aspects of the focus group's behaviour with a focus on concern for people, and shop floor employees – particularly team leaders, to focus on concern for task. The net affect of this is the company aims to achieve 9,9 while individually management seeks 2,9 and shop floor employees seek 9,2.

Outline departmental roles were discussed to counter preferred blame-laying internal styles. As part of the pre-development programme, the P&A department were trained to accept being blamed, while additionally providing solutions to both management and workers, in figure 5.2.



**Figure 5.2 Internal Constructive Relationship:  
with a contrived alternative blame Target**

This was in line with the unconditionally constructive strategy by Fisher and Brown [402], while aiming the focus group to 7,7 on Blake and Mouton's managerial grid [403]. This

approach allowed the group to be concerned for the employees and the situation while ensuring that the employees did not dump their responsibilities, and reduced the group's previous tendency to 'take the monkey'. A specific instance of taking the monkey was noted where, at the end of normal office hours day, there were emergencies to organise tickets, cash and accommodation for evening and night flights to Germany to deliver components.

Analysis identified three coping strategies:

- Ensure there was enough time to arrange collection by courier,
- Ensure shop floor staff provide sufficient notice of the need to hand deliver goods, or
- Train workshop team leaders in how to organise these themselves, providing all necessary telephone numbers and a batch of pre-selected order numbers. All that was then required was for a phone line with national dialling capability and authority to be granted to the operations manager to sign off on the expense. This option became the accepted practice until sufficient safety stock had been built up in the downstream pipeline and the plants were consolidated on one site.

## 5.8 Preparation for the Second Audit

The enlarged personnel and administration department became the principal agents for change while preparing for the second assembler audit. The following were identified as potential M E Ltd responses.

- **Pre-empting admission** of primary audit miss-classification, possibly with an “injured friend approach” [404]
- **Keeping quiet** - effectively **playing ignorant** - in order to accept help graciously,
- Forming an **organisation defending** style and perspective which is based upon ‘our company is different’,
- Rushing through **cosmetic changes** to proceedings, creation of meeting minutes, creation of forms and *proformae*, creation of procedures, policies, guidelines, rules and regulations. Thorough preparation from managerial functions is followed by presenting to the OEM auditors, explaining ‘the activities that are now in place’ and any reasons for not complying with OEM expectations and imposed policy. Later, their creators explained these same documents and policies to senior management, as to the reason for their adoption. The change in attitude could be explained by *cognitive dissonance* and understanding of the new systems usefulness, together with a recognition that the OEM and other auditing authorities will expect to return periodically.
- **Delaying tactics** - in order to rush through changes in order to effect a full ‘cover up’ by installing and using the new systems honestly before the OEM makes a return visit.
- Through to Porter’s ‘Dog’ business shedding ‘**take it or leave it**’ attitudes being displayed, [405].

The enlarged personnel and administration department fabricated minutes to meetings, policies, strategies, improvement forms and decisions. The primary goal of these fabrications was to provide evidence to the auditors that an improvement scheme had been implemented and the company was attempting to enhance its performance. The focus group identified that the fabrications did, in fact, make logical contribution to the business. The act of creating the fabrications therefore acted as a synthesis of genuine activities, and acted as a preconditioning process. This relates to cognitive dissonance associated with justifying situations and decisions. The parent company's senior management subsequently decided to adopt the policies, strategies and improvement forms as the basis of their improvement scheme. The act of fabricating also overcame the 'not invented here' scenario.

## **5.9 Psychological Interactions**

The interactive nature of the action research programme led to the identification of the hard and soft dynamics that are best described in scenario format [406]. As a result of this type of interaction, the psychological contracts effectively changed between senior management and workers. The research found 'Consultant', 'Yes, but' and "Its Not My Fault" psychological games [407] being played similar to those later described by Wild [408].

The process to change the intra functional game "Its Not My Fault" between management and workers took just over one year. The recruitment programme to find and train additional office staff largely dictated this time scale. A result of blaming the information transfer nodes, managers and workers tacitly learned that their queries, problems and doubts would be dealt with, and solutions identified relatively rapidly.

With the opportunity to lay blame elsewhere, operations management and work teams both readily approached the personnel and administration department to gain advice on how to resolve their problems. The relationship between management and workers consequently

improved to the point where they communicated easier, hence assisting in the resolution of their problems, whilst retaining a symmetrical blame game with personnel and administration. A review by their major assembler customer rated the performance, particularly that of the Administrative and Personnel department, as exceptionally commendable. The assembler also noted the change in the relationship between management and shop floor. The focus group subsequently became explicitly recognised by the parent company as an efficient department, with effective problem solving and team characteristics.

### **5.10 Results**

The main consequences of the research phase are that:

- M E Ltd retained its supplier rating against assembler audit higher performance expectations.
- The culture at the company was perceived as having improved based on feedback provided by assembler auditors.
- A synthesis to create a 'history' of activities facilitated the introduction of more formalised approaches to new employee induction and 'contribution' appraisal.
- The focus group implemented a scheme at M E Ltd to improve internal communication channels and to introduce a more participative management style.

### **5.11 Conclusions**

This research identified opportunities to 1) enhance management structure by creating and developing staff positions to cope with a three-fold increase in the number of shop floor employees, 2) improve the control and reliability of shop-floor operations, and 3) enhance administrative processes.

The focus group, working in association with this research project, implemented a programme to enable M E Ltd's staff to develop themselves, their subordinates, groups and teams. The programme was later summarised as preconditioning. A research contract was established with NP Ltd to validate the hypothesis that a preconditioning programme for supplier

development and other improvement initiatives provides support for progressive organisations, irrespective of size or position in the supply chain.

## 5.12 Definition of Preconditioning

### 5.12.1 Definitions of Preconditioning

The Oxford Concise Dictionary defines precondition as "a prior condition, that must be fulfilled before other things can be done" and as a verb "to bring into a required condition before hand".

Psychological use of precondition focuses on creating a link by association between two stimuli. If a response to one stimulus is conditioned, the response will also occur as a result of the other stimulus. Conditioning and reconditioning are also examined in clinical psychology [409, 410, 411].

From a purchasing perspective, Håkansson and Snehota [412] summarise their supply chain network model by addressing the notion of boundaries and relationships.

Business organisations often operate in a context in which *their behaviour is conditioned* by a limited number of counterparts, each of which is unique and engaged in pursuing its own goals [413].

(Emphasis added)

Their use of behavioural conditioning represents the constraints and positive influences resulting from co-operation, synchronisation and focusing on core competencies.

### 5.12.2 Nevantie's Contextual Use

Nevantie [414] defines preconditioning in context of preparing training courses. He states there are:

three main parts in the course development and delivery process in Contra: preconditioning, development and the delivery. During the preconditioning phase, the course developers are notified about the courses, and the course owner together with the development team is appointed. During the

preconditioning phase, also the information is sent to different interest groups like the regional offices, which need the information for their own scheduling purposes. Development phase of the process means the development of the actual course. It includes the preparation of the material, the training sessions and the trainers. The final, and maybe the most important, phase is the delivery. In addition to the actual training, the delivery phase encompasses the request for a course, the scheduling of the recourses, preparing for the delivery and the evaluation of the delivery. The evaluation of the delivery includes also the usage of the evaluation information. The information in this section is based on comments from an old employee.

Nevantie continues by intoning that the recruitment phase can act as a deterrent:

The commitment of the people was not knowingly enforced during any part of the preconditioning phase, but the way of appointing people to different projects was not a real problem. The course development was often done in groups of two and there has been enough interesting projects for almost everyone.

The procedural part of preconditioning according to Nevantie is described thus:

the first phase in course development and delivery process is the preconditioning phase. The phase is initiated by one of the co-operators when they request for a new course ... that ... does not exist ... already. The request is directed to the ... Section Manager. During this process step, the section manager's task is to separate the essential from the request and analyse it together with co-operational parties according to predefined criteria... The result from this process step is the evaluation of the course request.

In the context of this programme, the action research focused on directing a study conducted by the company to identify its own problems, challenges and opportunities. In so doing, activities included imparting self-supporting learning, problem solving, relationship analysis and negotiation skills.

### **5.12.3 Attributes as Pre-conditions**

Representing Rolls-Royce, Collis [415] differentiated between approved, preferred and strategic suppliers. They do this by ascribing the minimum attributes required to fulfil specified criteria. Figure 5.3 Shows their criteria, which are described as pre-conditions. In the context of this research, however, these criteria are pre-requisite attributes to attain various levels of status. This approach thus distinguishes conditioning as a process, and the

attributes as a state of readiness – in effect an established capability. This is similar to O’Laughlin et al, (shown in figure 3.2).

**Table 5.1 Mandatory Minimum Pre-Conditions for Suppliers to Rolls-Royce  
(by Collis, Rolls-Royce)**

PRE-CONDITION	STRATEGIC	PREFERRED	APPROVED
CQC103 and Technical approvals	X	X	X
Standard Terms of Business	X	X	X
Contract Flowdown Acceptance	X	X	X
Financial Review (£100k Annual Business)	X	X	X
Long Term Agreement (General)	X	X	=
Project 2001/HISPEC (Long Term Agreement and NDA)	X	=	=
EDI	X	X	=
CADDS 5X Interface Capability (Where applicable)	X	=	=
Assessment Score > 55%	X	X	=

Note: (NDA - Non Disclosure Agreement)

### 5.13 Preconditioning

The hypothesis of this research tested is that: A preconditioning programme for supplier development and other improvement initiatives provides support for progressive organisations, irrespective of size or position in the supply chain.

Preconditioning is a phase of change programmes that attempts to prepare participants by orientating perceptions and contributing to the creation of an attitude of continuous improvement.



### **5.13.1 Preconditioning Programme for Supplier Development**

The aim of preconditioning programmes is to facilitate and support implementations and existing on-going programmes that provide opportunities for the creation of competitive advantage.

Various literature sources were provided as background reading to the focus group in order that they form their own basis for preconditioning. These included Allan [416], Argyris [417], Blanchard and Johnson [418], Brown [419], Berne [420], Brennan and Block [421], Carnegie [422], Casse [423], Champy [424], Clemmer and McNeil [425], Fisher and Ury [426], Fisher and Brown [427], Investors in People [428], Johansen and Swighart [429], Johnson [430], Pondy and Huff [431], Sun Tsu [432], Sun Tsu II [433], and Walther [434]. Assembler customer's literature on their change programmes and supplier auditing measures was provided.

By providing the literature and chairing regularly held sessions, the focus group cognitively reviewed the literature and accepted the imperative to improve. Quotations used by the focus group are attached in Appendix 4.

## **5.14 Interpretations Matrix**

As discussed in section 2.2.1, Coolican used the terms interpretation, culture and perspective in his text. In learning situations and in the case of supplier development that is the focus of this research programme, concern for universal validity contributed to motivation that led to the creation of the interpretations matrix.

Figure 5.3 shows a matrix that was developed and categorised Targets and change Process fields. The matrix is a result of the work with M E Ltd, and is based on the identified attributes of the undertaken analysis.

It was proposed that:

- The interpretations matrix is a conceptual framework designed to assist participants to unify perspectives and approaches to improvement and development.
- The matrix would be of use during the categorisation of company data and the analysis of scenarios.

The concept of a Source of improvement, or an agent of change is also recognised by the matrix.

<div style="border: 1px solid black; padding: 5px; display: inline-block;"> <b>SOURCE</b> (WHO)                 </div> (WHO/WHAT) <b>TARGETS</b>	<b>PROCESS</b> (HOW)										
		DRIVING FORCES	PSYCHOLOGICAL	PERCEPTION	PHILOSOPHY	LEARNING	CHANGE	DEVELOPMENT	TECHNIQUES	RESULTS	DRIVING FORCES
INDIVIDUAL		A 1	B 1	C 1	D 1	E 1	F 1	G 1	H 1	I 1	J 1
PERSONAL		A 2	B 2	C 2	D 2	E 2	F 2	G 2	H 2	I 2	J 2
INTERPERSONAL		A 3	B 3	C 3	D 3	E 3	F 3	G 3	H 3	I 3	J 3
GROUP,		A 4	B 4	C 4	D 4	E 4	F 4	G 4	H 4	I 4	J 4
TEAM,		A 5	B 5	C 5	D 5	E 5	F 5	G 5	H 5	I 5	J 5
ALLIANCE,		A 6	B 6	C 6	D 6	E 6	F 6	G 6	H 6	I 6	J 6
HIERARCHY		A 7	B 7	C 7	D 7	E 7	F 7	G 7	H 7	I 7	J 7
ORGANISATIONS		A 8	B 8	C 8	D 8	E 8	F 8	G 8	H 8	I 8	J 8
CHANGE AGENT		A 9	B 9	C 9	D 9	E 9	F 9	G 9	H 9	I 9	J 9
ALLIANCE,		A 10	B 10	C 10	D 10	E 10	F 10	G 10	H 10	I 10	J 10
MONOPOLY,		A 11	B 11	C 11	D 11	E 11	F 11	G 11	H 11	I 11	J 11
CARTEL,		A 12	B 12	C 12	D 12	E 12	F 12	G 12	H 12	I 12	J 12
CO-OPERATIVE,		A 13	B 13	C 13	D 13	E 13	F 13	G 13	H 13	I 13	J 13
PARTNERSHIP,		A 14	B 14	C 14	D 14	E 14	F 14	G 14	H 14	I 14	J 14
CONTRACTOR,		A 15	B 15	C 15	D 15	E 15	F 15	G 15	H 15	I 15	J 15
CLIENT,		A 16	B 16	C 16	D 16	E 16	F 16	G 16	H 16	I 16	J 16
SUPPLIER		A 17	B 17	C 17	D 17	E 17	F 17	G 17	H 17	I 17	J 17
CUSTOMER		A 18	B 18	C 18	D 18	E 18	F 18	G 18	H 18	I 18	J 18
EXTERNAL BODIES		A 19	B 19	C 19	D 19	E 19	F 19	G 19	H 19	I 19	J 19
IMPLEMENTATION ACTIVITIES		A 20	B 20	C 20	D 20	E 20	F 20	G 20	H 20	I 20	J 20
-SUPPORT		A 21	B 21	C 21	D 21	E 21	F 21	G 21	H 21	I 21	J 21
-DIRECT		A 22	B 22	C 22	D 22	E 22	F 22	G 22	H 22	I 22	J 22

**Figure 5.3 The Interpretations Matrix – Oriented for Spreadsheet Data Input**

The matrix was derived from the literature review, discussions with other researchers and the core team members at M E Ltd and examination of the survey results. The core element that highlighted the need for a non-linear flow model was the reluctance to change identified stemming from fatigue associated with improvement implementations.

## **5.15 Development of the Interpretations Matrix**

### **5.15.1 Origins**

The interactive nature of the action research project with M E Ltd led to the identification of hard and soft issues associated with the approach taken by individuals in their relationships with others described by Newlands and Southey [435]. Target attributes also are described in this paper. Attributes on the Process axis are defined in Newlands and Southey [436, 437]. These articles are reproduced in chronological sequence in appendix 6.

Due to the on going and multiple location nature of the work, some portions of the research were based on analysis and recommendations provided to key participants based on frequently updated descriptions of their situations. This effectively became implementation by *remote control*. This liberated time enabling simultaneously to develop plausible solutions for the participants, assess likely responses by the scenarios' other key players and implement agreed action plans. This approach avoided a supervisory perspective and promoted a friendly old sage or honest broker image. It also allowed the participants to go about their business with an agenda, though without the Source of the initiative being present and causing resistance as a result of intimidation or fear.

### **5.15.2 Justification**

The decision-making models by Webster and Wind (figure 3.4) and Sheth (figure 3.5) depict a series of data inputs at either an explicit or tacit level. Subliminal or conscious comparative or analytic procedures are undertaken to arrive at the decisional output. In effect, these models act as a static map for given scenarios. Discussion of these models identified that they require significant updating to take account of paradigms employed by corporate functions in the lean and agile era. To overcome the limitation associated with a model's reducing appropriateness due to evolving manufacturing and management best practice paradigms it was concluded that an efficient method of recording observations is desirable.

Consequently, the interpretations matrix has been used as a current state description recording instrument and, on the same set of axes, provides the traceability to activities designed to ameliorate or enhance the issues identified.

The matrix has been devised so that it places key attributes of the change process on one axis, and the principal targets on the other. From the perspective of both Source and Target, four phases are outlined:

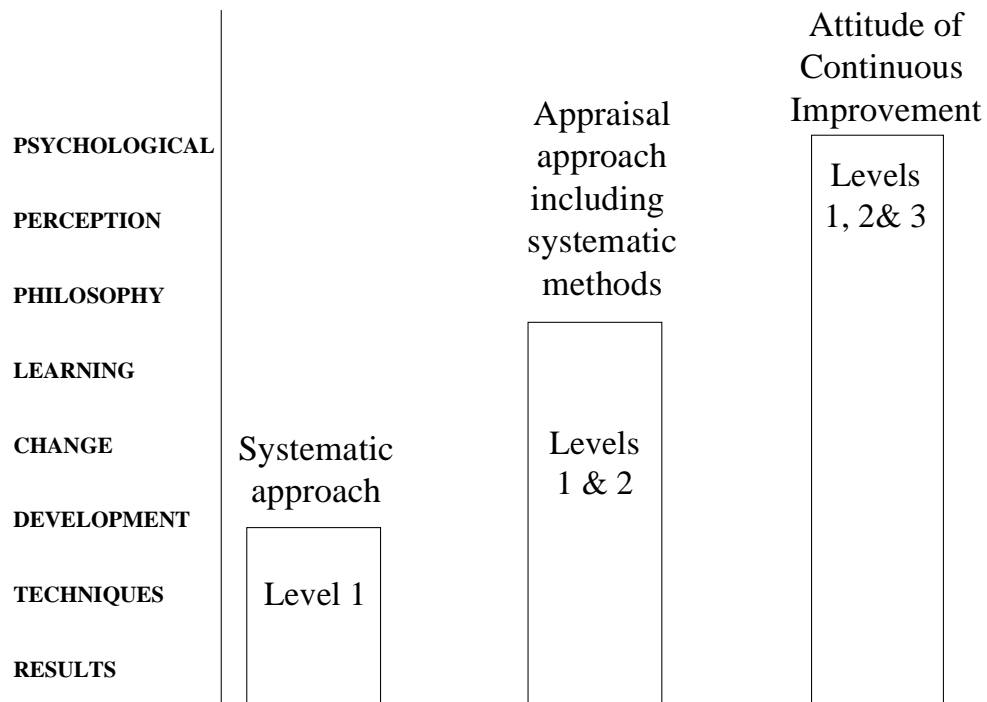
1. The present position,
2. The current problem, complication or challenges,
3. Possible modes of response (active, reactive and proactive),
4. Proposals – candidate solutions.

These four phases reflect the action research programme undertaken at M E Ltd. From this analysis, consensus can be created through search conference events [438] and implementation facilitated by relevant sources. Search conferences are perceived as a viable approach to pre-conditioning participants (both Source and Targets) for improvement and development.

The matrix lays out on the horizontal axis factors taken into account when designing the strategic change initiative with M E Ltd. The horizontal axis places approximately equal emphasis on Blake and Mouton's concern for people and concern for task [439]. The transition between concern for people and task is bridged in this framework by concern for improvement and development that stem from learning and change. At each end of the axis there are business environmental factors - pushing and pulling forces and results. These elements represent the commercial imperative to remain competitive in business environments that change as a result of extrinsic actions by other participants, as well as the intrinsic results and positioning by the focus Target.

Attributes listed on the process axis are sequenced in a similar manner to Barrington's hierarchy (figure 4.10) are shown in figure 5.4. Results and techniques equate to the systematic approach. Combined with results and techniques, development, change and

learning equate to the appraisal approach. The previously named attributes plus philosophy, perception and psychology equate to the attitude for continuous improvement. This perspective of Barrington's hierarchy eliminates the distinguishing layers shown in figure 4.10. An alternative proposal is to depict pillars of varying heights shown in figure 5.4 below.



**Figure 5.4 An Alternate Perspective of Barrington's Hierarchy based on Pillars**

The focus group at M E Ltd aimed to achieve 7,7 on Blake and Mouton's managerial grid. This approach allowed management to emulate aspects of the focus group's behaviour with a focus on concern for people, and shop floor employees – particularly team leaders, to focus on concern for task. The net affect of this is the company aims to achieve 9,9 while individually management seeks 2,9 and shop floor employees seek 9,2.

The vertical axis from the top to bottom ranks attributes and Targets for improvement and development. These Targets also take into account the concern for people and task. Concern for people is represented by a series of classifications that define the socio-organisational gestalt [440] in terms of context and scope.

Some of the social group Targets are transitive, i.e. they may become Sources of improvement and development. Other Targets, particularly the activities and relationships are intransitive and remain Targets. Various perspectives are possible that contributes to the interpretation and subsequent intervention approach. It is necessary therefore to clarify the Source and relationships to other participants. This is nominally by defining who is in charge, those providing training, materials and whom is learning or being studied. From a range of analyses by various Sources, combined with open and honest communication, it is contended that the participants are more likely to generate a satisfactory solution.

A distinction needed to be made for each scenario between those that are reluctant to change, and those that advocate, lead, or otherwise participate in improvement initiatives. An intrinsic attribute of change initiatives is the goal-oriented emphasis on key performance indicators and other results. In Barrington's systematic approach, results are made possible by procedural techniques, for example including statistical process control and failure mode and effect analysis, as shown by Hahn, Watts and Kim (figure 4.4). The matrix is founded on the proposition that such systematic approaches do not take human factors such as motivation and goals into account.

Original equipment manufacturers' motivation to implement supplier development initiatives stem from various sources. The primary sources of motivation are the competitive situation of the manufacturing sector caused by competitors and rising consumer expectations and the will to survive. Other secondary sources are nominally associated with improvement in operations management effectiveness and efficiency: quality, cost, delivery reliability, lead time reduction, product variety, assembly line versatility, and productivity.

### 5.15.3 Explanation of How the Interpretations Matrix Operates

Figure 5.3 depicts the interpretations matrix oriented for use as a spread sheet. Each cell is numbered for quick reference and clarity between participants. Participants can be instructed to fill the cells with text in columns from A to J, J to A or in an ad hoc manner; similarly filling rows from 1 to 22, 22 to 1 or in an ad hoc manner. What is considered important is that proper consideration is given to relevant Targets for each process attribute that describe inputs, controlling variables and outputs. The principal benefit over organic mind-maps [441] is that the matrix acts as a method to pigeonhole data for rapid assimilation, comparison and agreement.

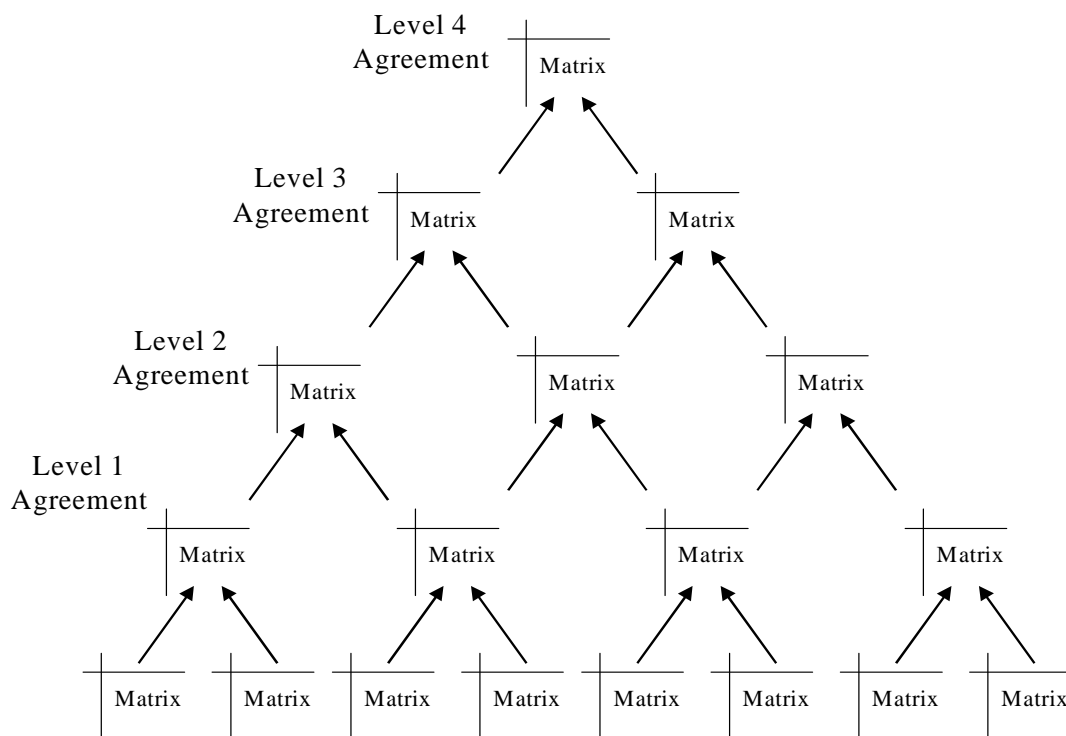
The company may have a solution, for example a widely applicable technique, and is searching for candidates to host the implementation. Tayloristic use based on authoritarian issuing of instructions tends toward ignoring psychological, perceptual and philosophical elements of a pre-implementation analysis. Use of the matrix forces the analyst to intentionally ignore these attributes, make use of cognitive dissonance by suggesting, as Henry Ford [442] argued, that knowledge workers need not extend 'unwanted sympathy' to workers undertaking repetitive activities.

The matrix hence can be used in a number of manners including:

- 1) A single individual recording observations
- 2) A group or focus team recording observations
- 3) Reengineers planning a factory or operations from a blank sheet
- 4) As a supplementary data recording instrument used to analyse social and technical aspects during a failure mode and effect analysis.
- 5) Sociological and technical management's attempts to plan how to achieve 9,9 on Blake and Mouton's managerial grid.

### 5.15.4 Data Entry and Pyramiding

Pyramiding can be used to gather individuals' entries. Depicted in figure 5.5, pyramiding is a group learning and facilitation technique that requires individuals to reflect and record findings. The data can be directly compared to one other individuals' and an agreed interpretation is reached. Pairs of individuals then compare their joint interpretations and agree a second time. Two groups of 4 then compare and agree a third time. Pyramiding is an established method for reflective practitioners and group learning events such as search conferences. Pyramiding tends to be most effective if used in 'max/mix' – maximum mixture - groups, where participants do not know, or are only partially acquainted with, each other and have different functional perspectives.



**Figure 5.5. Pyramiding Matrix Interpretations**

The matrix facilitates the learning process by using a spreadsheet pro forma to record observations. This allowed the axes to be 'frozen' for easy data input, storage and retrieval. Comparative analysis is thus possible by comparing data located in the same location on different sheets. Thus blank copies of the interpretations matrix are provided to participants



for their initial data. At each level, two matrices are reviewed and third agreed matrix is created. This procedure provides trace-ability. Either due to time constraints or to maintain momentum and cohesive groups that are focused on their tasks, typical session management practice for session leaders is to limit the time spent on level 1 data entry. Comparison and agreement processes create interaction; for groups consisting mainly of extroverts, this creates motivation. For groups consisting mainly of introvert 'company workers' or 'completers', more time can be spend to individual reflection, or facilitating follow up sessions once participants have filled in as many intersections as they feel is justified. Due to confidentiality agreements, representative data has been substituted to provide a set of example results of using the interpretations matrix.

## 5.16 Summary

This chapter reviews work undertaken with M E Ltd including:

- A company wide attitude survey, remedial interventions using action based research that focused on internal information chains and
- Addressing the cultural aspects of the business that were identified as likely to inhibit the effectiveness of externally provided supplier development programmes.
- The collaborating organisation's senior management was motivated to improve and develop stemmed from a fear that the OEM would re-source. Senior management responded to input stimulus from the middle management functional specialists that had gained an awareness of the performance requirements anticipated by their customers. Motivation for the departmental staff stemmed from 'pride' in their work, and knowing that the *consumer* was satisfied with the product.

Dissonance was recognised as a core element of both the inhibitors to achieving performance and as part of the remedial strategy to rectify the situation.

The following chapter summarises validity research undertaken with NP Ltd and its supply chain to challenge the elements listed on the axes, and hence determine its validity. The objective was to observe the implementation of a standard set of improvement techniques combined with a systematic approach to overcome reluctance to change and build a shared culture.

## Chapter 6

# Validatory Research

### 6.1 Introduction

This chapter describes work to analyse business scenarios and relationship requirements using the interpretations matrix, shown in figure 5.3, to record observations. The chapter examines an assembler, four first-tier suppliers and a downstream distribution company involved in creating branded consumer electronic goods exclusively for the Japanese market. The assembler is a European public limited company that is listed on five stock exchanges and is the global leader by volume in its product category. Two of the suppliers are European. One company based in the United Kingdom and the other in a Nordic country. The other two suppliers are based in Japan. The distribution centre is a contractor based in Japan. Use was made of the interpretations matrix, identified in Chapter 5, to analyse the business scenario and each company's unique situation.

During the period of field research, the researcher was a direct employee at a product creation centre in the United Kingdom that is fully owned by the NP Ltd. The role focused on promoting a design for logistics concept within product creation centres and to influence the product design, thus facilitating the supply chain to produce goods at the lowest total logistics cost. This position had direct responsibility for the logistics considerations during product design and manufacturing preparation. The role focused on three themes: 1) the sales package and the augmented product based on service levels, 2) flow (of information and materials), and 3) identifying lessons to learn.

## 6.2 Market Considerations and Constraints

Japan is a dynamic market for electronic consumer-durables. Consumer electronics sectors have witnessed significantly shortened time frames to manufacture and sell goods. This primarily is due to the rapid progress made in microelectronics hardware and software development and the intense competition between goods of comparable specification.

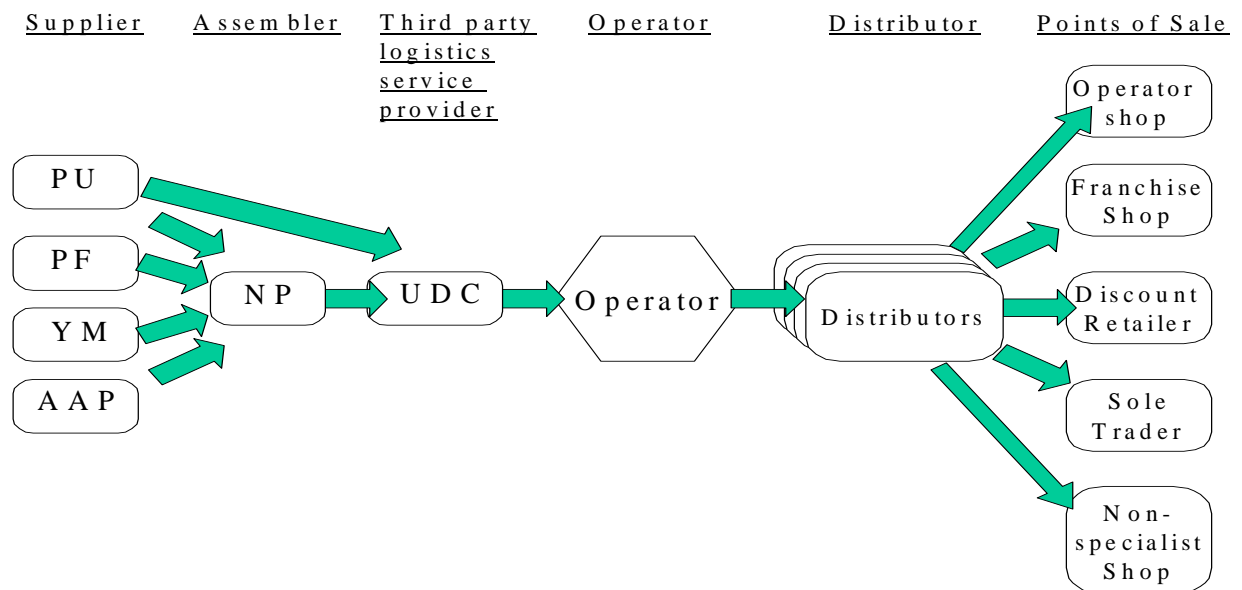
Manufacturers typically release products in line with the cyclic economic periods prevalent in Japan. March and April, October and December are considered key months in which to make sales. Manufacturers attempt to synchronise product releases to these months. Should a manufacturer's time scale slip, the window of opportunity to launch and sell significant quantities disappears. In such an environment, there is a significant potential to incur obsolescence costs.

Japan market has significant aesthetic quality and functionality requirements, where perception of defects is subjective at best. These requirements are drivers for the use of quality function deployment to determine what constitutes a defect. Management of the second collaborating establishment – NP Ltd - recognised that there was a disparity between the perception of quality in Japan and the criteria used to assess defects within its Western subcontractors and the final assembly plant.

## 6.3 Outline of Companies

Companies discussed in this chapter have had their names disguised as NP, PU, PF, YM, AAP, and UDC in response to concerns for confidentiality. NP is the final assembler and brand name owner of consumer electronic goods. PU, PF, YM and AAP are aesthetic component producers. UDC is a downstream third party logistics services provider. The relationship between these companies is depicted in figure 6.1. YM, AAP and UDC are businesses owned and operated by Japanese in Japan. *Face* (dignity) and *on* (respect for one's

country represented by nationalism) were evident in all the studied companies. AAP were considered the most eager to do business with NP.



**Figure 6.1 Value Chain from 1st Tier through to Point of Sales - Relationship of Case Companies**

#### 6.4 Use of the Interpretations Matrix within the NP Supply Chain

NP agreed to support this research programme provided the companies' names were modified to camouflage their corporate identifies. Overt role based research agreed to focus on the analysis of NP's products in terms of design for logistics. The end objective of the role was to influence the design decisions during product creation to optimise the production processes. The management agreed also to support the covert research agenda that focused on the examining the fit between NP's supply chain management and integration approaches and the interpretations matrix. The aim was to use the matrix and thereby test ease of use and assess completeness [443]. The objectives were to use the matrix as the tool for a current state analysis and to discern the validity of the Target and Process field sequences.

## **6.5 NP Ltd**

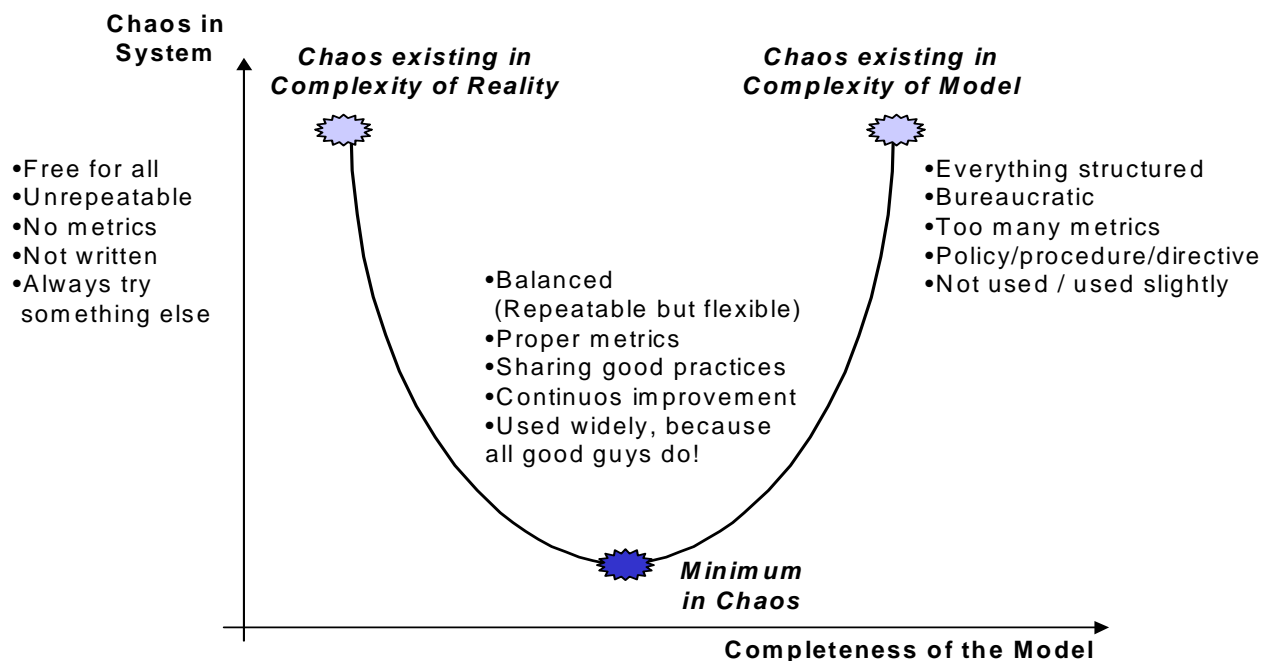
NP Ltd is a European assembler of high volume electronic consumer goods and is listed on five stock exchanges. NP integrates technologies, defines products, designs finished goods, prototypes and assembles the core product. All accessories and packaging materials are outsourced. In its fiscal year 1999, NP produced approximately ninety million units in twelve assembly plants in the Americas, Europe and Asia. By 2000, the company increased output to 136 million units with a combination of increased productivity and outsourced manufacturing. Due to the creation and rapid expansion of the business sector, in 1999 NP produced more products during pre-production for design verification purposes than the company capacity fifteen years earlier. Between 1997 and 2000, the company grew from approximately 35000 to more than 50000 employees. The rapid expansion of the business created a situation where new employees frequently were being recruited. All new employees are made aware of the company's four values - customer satisfaction, respect for the individual, achievement, and continuous learning. The values are considered fundamental to the success of the business due to the mix of national and site cultures.

NP recognised the imperative to outsource all accessory materials and component production. Subcontract manufacture of complete products had been reserved for mature, near end of life models. Due to increasing demand beyond NP's strategically desired rate and ability to expand its in-house capacity, new models began to simultaneously ramp-up in out-sourced production facilities. NP estimates anticipate the global market rate of expansion will start to decline in 2002, with market saturation/maturity approximately 2007. By April 2001, three of NP's major competitors have begun laying-off employees in the UK.

Tolerance of diversity is a core relationship dynamic message in NP's year 2000 strategy. This strategic message reinforces the concept of providing opportunities to individuals that they may achieve desired results in the manner that is most convenient. In addition, associates are made aware of the company's product creation and delivery process model that

describes at a highly abstract level the types of activities undertaken to create and deliver goods and services. All employees are appraised based on the investors in people initiative model. This constitutes the achievement of the second level of Barrington's model [444]. NP was attempting to move to the third level based on the widespread adoption of a continuous development attitude.

Figure 6.2 depicts NP's conceptualised model to achieve efficiency and effectiveness. The philosophical argument 1) moderates or balances possible 'paralysis by analysis' and clarity-of-the-message due to the introduction of too many variables in the conceptual model, and 2) tolerates individuals' abilities to interpret the product creation and delivery model to suit the requirements of disparate projects. NP also associate the model with the value of being able to transfer useful approaches or 'best practices' between product development programmes and manufacturing plants.



**Figure 6.2 NP's Model of Chaos, Complexity and Completeness (NP Ltd Training Material)**

NP accepts that for dynamic companies the best solutions are strongly context dependent. Therefore with reference to a common conceptual framework and terminology, their stated goals are to seek deeper understanding and look for good practices. These stemmed from knowledge management propositions described by Grayson and O'Dell [445].

Figure 6.2 is complemented by inverted parabolic models describing the degree of access to collaborative networks versus derived benefits [446], and the degree of task related behaviour versus supportive relationship building behaviour [447, 448].

#### **6.5.1 NP Recruitment and Induction Process**

Prospective NP staff are assessed using psychometric tests at their first interview. NP uses a psychological profiling instrument to determine individual's basic behaviour characteristics and assess the compatibility with the company's values and the role requirements.

A second interview typically 'stresses' the applicant whereby interviewers provide scenarios that require the applicant to describe how they would respond. Prior to commencement of the position, sets of formal contracts require signing to show agreement. These include:

- position specific and general terms and conditions,
- company confidentiality agreement,
- an intellectual property non-disclosure clause,
- an acceptable and non-acceptable behaviour guideline (including a receipt of gifts clause)

These documents provide a context within which the individual will be expected to operate. By signing each contract, the individual indicates commitment to the conditions of service. This process acts as a screening and preconditioning process by creating a context within which further detailed work is learned and undertaken.

## **6.6 The Manufacturing Appreciation Training Incident**

As a member of Operations, Logistics and Sourcing management, part of the induction process was to attend a three week course at the company's original process plant (OPP) in a Nordic country. The objective of this course was to familiarise participants with manufacturing processes used to produce the sales package. This provided the first opportunity to be a direct participant in a social quasi-experiment.

The group consisted of British engineers and designers. Three of the group had served mechanical or manufacturing trainee-ships. The other four were electronic and software specialists that were largely unaware of manufacturing techniques. The three time served participants in effect audited the parent company's manufacturing operations. This was the tenth running of the course and the first time there was a dynamic interaction between presenters and participants. Part of the course requirements was to record observations of things that could be improved on a database. The average number of observations recorded was 15 during previous courses. The tenth group entered 163 observations on all aspects of the firms operations.

Two aspects were identified as challenging the corporate philosophies "acceptance of diversity" and 'fact based decision-making'. They are described in the following two sections.

### **6.6.1 Calibration Using Golden Equipment**

NP manufactures electronic goods with acoustic interface devices. After final assembly, the product is tested in bespoke test-boxes for all user interface characteristics. The quality control system used repeatability and reproduce-ability (R&R), fuzzy logic and design of experiments to establish and maintain datum decibel (dB) levels. Previous products set the datum level. NP selected a 'golden product' from the production run that precisely matches the datum in all respects. This golden product is used to calibrate all the test boxes.



Concern was raised during factory tours about the stability of the acoustic readings. It became clear that the R&R tests used twenty products tested three times to establish a correlated prediction of the test box stability. A test was proposed by a participant that the golden product be repeat tested in a calibrated rework station. The product was tested twenty times to establish if the results obtained would be stable, and to establish the 95% confidence range for all readings. Over the twenty readings, one of the tests results showed a stable mean. The second showed a progressive downward trend in each subsequent reading. The third showed for the majority of readings were on a downward trend, with some large re-alignments and subsequent downward trends. These data are company confidential and hence are not shown graphically.

The test data supported the conclusion that six golden products should be used. This proposal would use pairs of products that consistently provide stable readings for each of the test parameters. It was concluded that stability was more important than precisely aligned results. Stability would allow the use of constant offsets to the correct reading.

A presentation, of the mini project objectives, methodology and results, was made to the course sponsors after returning to the UK. Despite the corporate philosophy of fact based decision making, the presentation was greeted with emotionally driven remarks from senior managers including: "You are not an acoustics engineer." and "This is not your job. What do you know!"

A key question that remained unanswered was: "Was it the golden product or the test box?" Subsequent manufacturing appreciation training (MAT) courses identified that the test box required acoustic dampening materials, some redesign work and a valid calibration system.

### 6.6.2 The Quality Trainer Incident

The participants focused on the substantive issues associated with the value adding activities and support services. There was no intention to 'have a dig', be rude or aggressive to the presenters or other employees. One event that was identified as an indicator of the scenario involved a quality trainer. He introduced himself as representing the quality department. During the presentation, he made it clear he did not believe in the company's quality statement. This seemed at variance with his role as quality trainer. He was asked, "Do you know about Deming, Duran, Taguchi, Crosby and the rest?" and answered affirmatively. "Do you teach this to the people in the workshop?" and replied "No". To this he added, "They don't need to know."

At this point, it seemed clear that he had 'hung' himself. There was an opportunity to 'back off', however there seemed to be scope to examine the logic behind this. A participant stated "If you don't teach them this, they will not be empowered to analyse problems and make recommendations." The response was "Who are you? How long have you worked for NP?" Given the relatively short service indicated by the reply, the trainer became dismissive.

This dialogue can be perceived as an example of miss-perception and communication between people of different ego states in a transactional analysis [449]. A transactional analysis model for this situation indicates communication between 'parent' participants and 'adult' trainer. Additionally, the English pronoun 'you' was being used by the participant in the plural to indicate the quality department rather than the individual being addressed. It was later identified that the trainer likely took the pronoun and the comments to relate to him personally, and that then stimulated the emotive responses.

The participants, from their perspective, were sharing experiences and observations of better practice from other industries in line with the company explicit practice. The participants' managers suggested difficulties with this process were the communication exchange patterns, combined with presenters' lack of experience and data of other businesses and mid-winter

seasonal affective disorder associated with long dark nights, four hour days, and continuous sub-zero temperatures. Two issues concerning the language were apparent on reflection: 1) the lag time between data transfer and response was unusual for the British contingent. It became evident that time was to be given for translation, thinking, re-translation and preparation to start to respond. Culturally driven comparatively long interludes between statements had not been experienced by the participants before; 2) The presenters were not professional trainers, in many cases being picked off the factory floor as 'volunteers' to teacher due to their ability to communicate in English. Feedback at the end of the course suggested the participants had not demonstrated respect, and 'seemed to consider themselves to be perfect'.

After returning to the UK, the participant that had been identified as the 'ring leader' went on a 'Working Together' course. His manager conducted a review and peace keeping/restoring exercise with the factory personnel.

Approximately three months after the course, some of the trainers were in the UK and discovered that what is said in good faith can be interpreted very differently. This provided them with evidence that it was easy to 'take offence' and aggressively reciprocate as a result of differences in culture.

Subsequent courses were re-developed, with most of the presentations conducted in the UK. This allowed participants to ask 'sensitive' questions to their peers. Participants were then given specific advice to observe during their visit to the plant and suppliers, to expect a pause between speakers during a dialogue, and to store potentially difficult questions until their return.

### **6.6.3 Conclusions from Manufacturing Appreciation Training**

Conclusions from this research phase are that this company initiated actions, training events and courses designed to increase awareness. The aim was to facilitate the prevention of this type of scenario by reducing the probability of a repetition and its negative results. This in effect constitutes reactive, experientially demand driven, organisational learning. Subsequently, participants on the manufacturing appreciation training (MAT) course were preconditioned about what to expect.

*Face* and *on* were dominant factors in the scenario. NP subsequently provided psychological preference awareness training to all the Operations, Logistics and Sourcing (OLS) project management group members from all the various product creation centres. These courses were supplemented by courses for individuals to take by recommendation of their management including 'working together', decision-making, and Japanese cultural awareness programmes. The courses used the proposition 'feelings are facts'. These courses were supplemented by substantive techniques and results oriented awareness training programmes provided to OLS members including problem solving, component quality planning, process capability studies, statistical process control, design and process failure mode and effect analysis (FMEA).

### **6.6.4 Subsequent Participant Research with NP Ltd.**

Subsequent research work with NP Ltd highlighted the preference for two modes of communicating and learning:

- Focusing on technical capabilities and performance requirements
- Learning about oneself, and one's preferred working, leadership and decision making styles. NP has a corporate training facility that emphasises self-development. These sessions use etic standard classification systems including Belbin's team roles (BTR) and the Myers Briggs type indicator (MBTI). The objectives of such courses are to help the individual understand their strengths and identify opportunities to change.

These two modes emphasise achievement and respect for the individual, which are two of the corporation's explicit values.

NP ran seminars on both BTR and MBTI. These were combined with their institutional philosophy for minimum chaos (see figure 6.2). Their challenge is 'groupthink' that was identified, and seemed to stem from the demographic make-up of the operations, logistics and sourcing (OLS) project management group. The majority of OLS were shapers (BTR), and ESFJ – Extrovert, Sensing, Feeling and Judging (MBTI).

Part of NP's corporate ethos is for groups to reflectively examine their activities to identify what they could do better. The key indicator within NP of the concern for people is embedded in the management maintained explicit directive to examine attributes within ones' own sphere of direct influence. The statement frequently used was "Lets see what we are doing wrong and identify what we can do ourselves". This is in line with Fisher and Brown's unconditionally constructive strategy [450] that stresses one should do what's right for oneself and the relationship, regardless of whether the other participants are doing what's right or not. This approach also is in line with Towers' [451] recommendation to improve in-house, then examine and develop suppliers and subsequently incorporate customers for improvement opportunities. The interpretations matrix uses philosophy, perception and psychology field to examine these phenomena. NP company-specific data was recorded on the matrix as the basis for appraisals and highlighting training requirements. Representative data produced after the research period with NP is presented in appendix 5.

#### **6.6.5 Fact Based Decision Making**

Macro analysis and conclusions focusing on techniques and financial results derived for proposed strategies to make the supply chain lean are discussed by Newlands and Steeple [452, 453, 454]. From first principles, an arithmetic simulation was developed that examined

inbound and outbound logistics [455]. The simulation verified the scale of potential inventory reductions reported to be obtained by companies such as Honda of America [456] and Toyota [457] when they started to produce vehicles in the US. An analysis of the opportunities and drawbacks was undertaken and recommendations made. The core proposal was to re-locate final assembly to the target market. The techniques and results likely to accrue from implementing the proposal would have served to help close the competitive advantage gap between NP and its competitors producing in Japan. This would serve to reduce the response time, pipeline stock, obsolescence risk, and increase the range of variants that would be economically feasible as a result of late configuration. This recommendation was in direct contrast with two of the company's strategies: 1) not to build any more factories, and 2) not to recruit any more shop floor employees. In comparison with the interpretations matrix, adopting this approach would have altered the driving forces within the industry by assisting NP by setting a president in terms of strategy and benchmark performance. Despite benefits that would be derived and analysis from other sources that recommended the same course of action, the analysis was stonewalled.

Additions and enhancements to existing strategies were accepted after significant review and development. Justified proposals and recommendations that were diametrically opposed to the direction of existing strategies were not. The key issue had been that despite the organisation's explicit focus on fact based decision making, generated in this case by an arithmetic simulation; there exists an organisational intransigence at the strategic conceptual level that had not been detected earlier. This intransigence seemed to relate to the freeze state at the beginning of the coping cycle [458, 459].

#### **6.6.6 NP Supplier Audits and Development**

NP audited all vendors to assess their capabilities and deficiencies according to a standardised checklist. The criteria are an extension of QS9000 requirements [460]. Despite NP's own requirement, it became clear that the majority of the supplier base had either not been re-audited after a maximum of three years, or that administration associated with maintenance of the database had not been sustained. This created the situation that product creation programmes were using a significant number of suppliers that technically were no longer, or had never been, approved. This situation, it was reported, occurred as a result of assuming it was acceptable to do as the previous programme had done, without checking the fine details. NP's supplier development initiatives focused on tangible design process methodologies including FMEA, and production process verification including measurement system and gauge repeatability and reproduce-ability, and variation reduction using six sigma statistical control. During the period of research, NP did not provide training opportunities to attend courses on psychological, behavioural or other people oriented subjects to suppliers.

#### **6.6.7 NP based Research Conclusions**

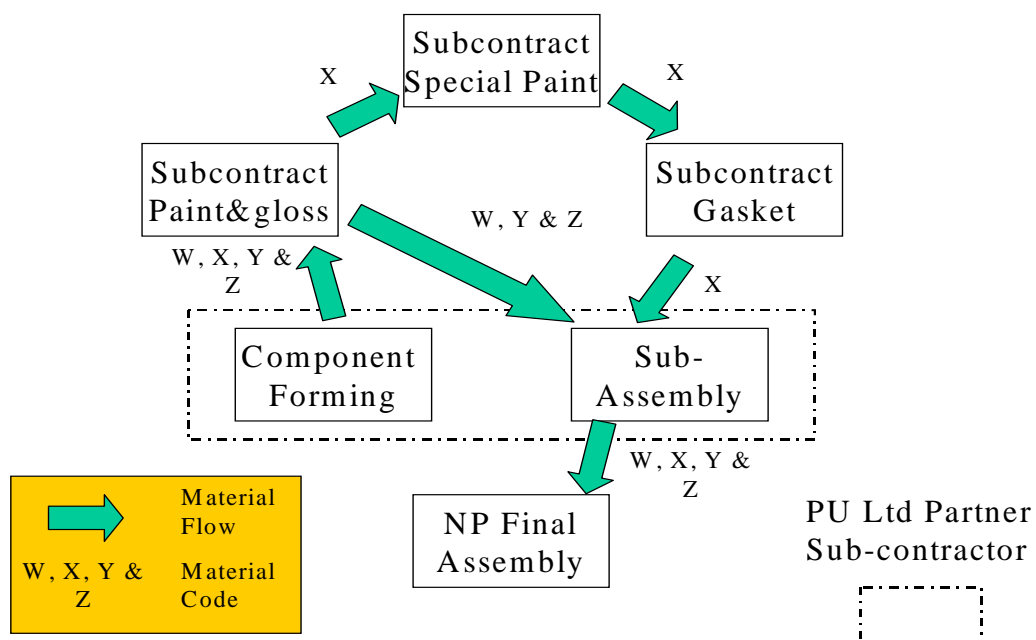
Despite an explicit management policy of 'fact based decision making', recommendations based on quantitative analysis were 1) encouraged to be 'hushed up', or 2) discounted in favour of consensus ratified senior executive's strategic level proclamations.

The role the researcher was employed to undertake recognised the requirement to identify 'grey issues' and those activities that 'fell down the cracks'. Detailed checking of supplier approval status may seem pedantic, doctrinaire or dogmatic. In context of the requirements for product liability and legislatively imposed extended warrantee periods, this seems less so. The activity to check their status is part of the Sourcing leaders' role description checklist and had not been assessed, despite more than one hundred of these leaders working globally on NP projects and their work status being checked at three milestones prior to product launch.

## 6.7 PU Ltd.

PU and its supply chain were studied with the aid of the interpretations matrix during a pilot product production run for NP. Primary explicit goals were to identify specific and generic lessons to learn for the design of logistics chains and evaluate the impact on profitability due to product designs requiring complex networks of suppliers.

PU Ltd is a British subsidiary of PF, a Nordic mouldings company that is located in Sunderland. PF Ltd advised NP UK to make use of PU during product design, tooling and production phases. This made geographical and cultural sense during design and tooling. From a purely logistical perspective, once tooling had been proven, PF would have been a superior supplier due to proximity to the final assembly plant. It was agreed however that the supply chain PU had newly established would be used since the planned production run was insignificant (0.375% of that year's volume) compared to the volume of products destined for American, European and Asian markets. Four companies added value to components in the PU supply chain - HH, AY, XP and NN. Figure 6.3 depicts idealised component flows for the four components.



**Figure 6.3 Planned PU Inbound Aesthetic Component Chain**



HH is located in London. AY's plant is within 30 minutes by road of PU. Both HH and AY are aesthetic coating specialists. It was observed that HH were secretive while AY had open communication with PU and NP representatives. From an emotive perspective, PU Ltd and AY demonstrated behaviour and attitudes that were eager to please and sincere.

HH mixed the coating materials in batches. AY in contrast mixed at the point of application. All the materials used were produced in Germany and sourced from a stockist in Birmingham. XP is a specialist paint coating company using advanced masking and electrostatic techniques to metalise polymer substrates. NN provided solidifying liquid gasket sealant subcontract services. XP and NN were only required to add value to part X. Part Z also was freighted from PU directly to UDC in Japan to be co-packed.

Originally it had been anticipated that materials would be pulled through the supply chain based on monthly demand forecasts and weekly delivery requirements. In theory, PU sold moulded parts to the painter. They painted the parts and scrapped a percentage due to their process yield. The painter sold on the remainder either back to PU or on to XP for metallic coating. XP would add their value then sell the parts to NN for gasketing. It was expected that the suppliers would order, from the next lower tier supplier, the volumes required by the next company in the chain plus their anticipated or actual yield rate loss.

Difficulties associated with the scenarios became apparent during ramp-up. Preparations during the product design and tooling phases had set up unanticipated scenarios. None of the companies in this scenario anticipated Forrester effects or quality defect liability issues. The complexity created by the liability/ownership policy and erratic yields created a lack of production synchronisation that resulted in NP purchasing involvement on a daily basis to expedite parts between moulding and the factory. This was done on an ad hoc basis by telephone and weekly visits. Other key issues identified were a lack of co-ordination between the subcontractors, low process yields and missing batches of parts. Feedback on the

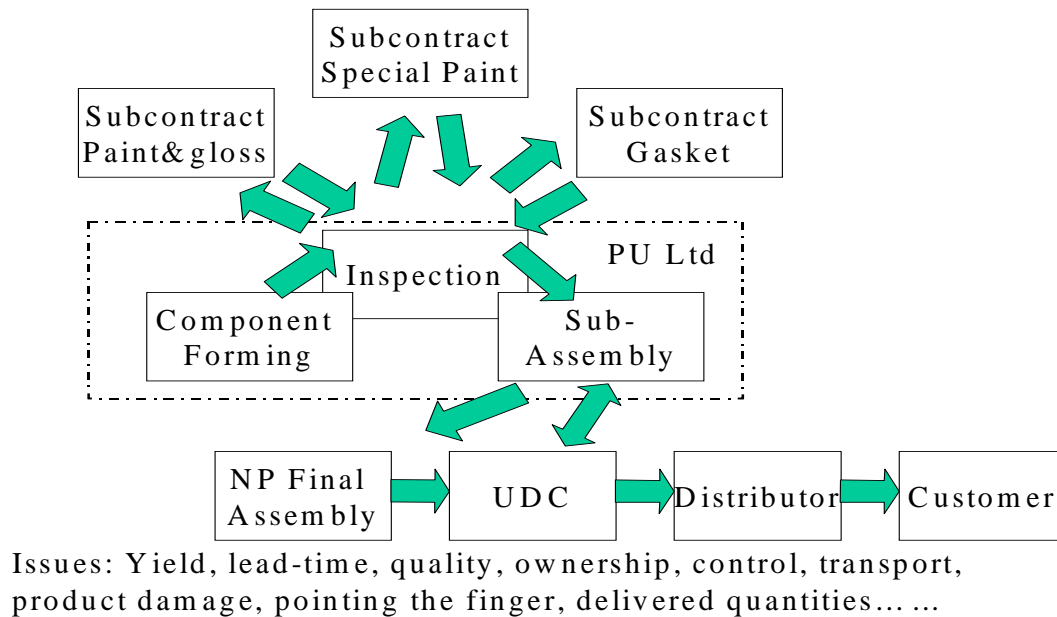
expectations of quality began to be received from UDC that robotic painting had too many imperfections. AY had a lack of employees that were skilled to the required level. The managing director of AY insisted on working shifts in the hand-finishing booth to achieve the yield and volumes required.

The yield rates from processes undertaken by selling companies required that the seller inspect the components before despatch. Suppliers in the component X supply chain route rapidly came to the conclusion that they would not accept the risk of buying the parts, adding their value and then not being able to sell the parts due to defects that had been present prior to delivery to themselves. This situation stalled ramp-up. At the lessons to learn meeting during the ultimate week of production, NP sourcing reported that, for every 15,000 parts PU moulded, they received back from the subcontractors for sub-assembly on average 3000. This in effect was a profitable business for PU moulding operations since the cost of purchasing, adding value and scrapping fell to the other subcontractors.

The route problem was the trading arrangements between each successive pair of companies. At an inter-business level, a commercial philosophy of 'you are responsible for your own work' contributed to the creation of the scenario where the subcontractors would not accept costs of inspecting lower tier supplier's components at their premises.

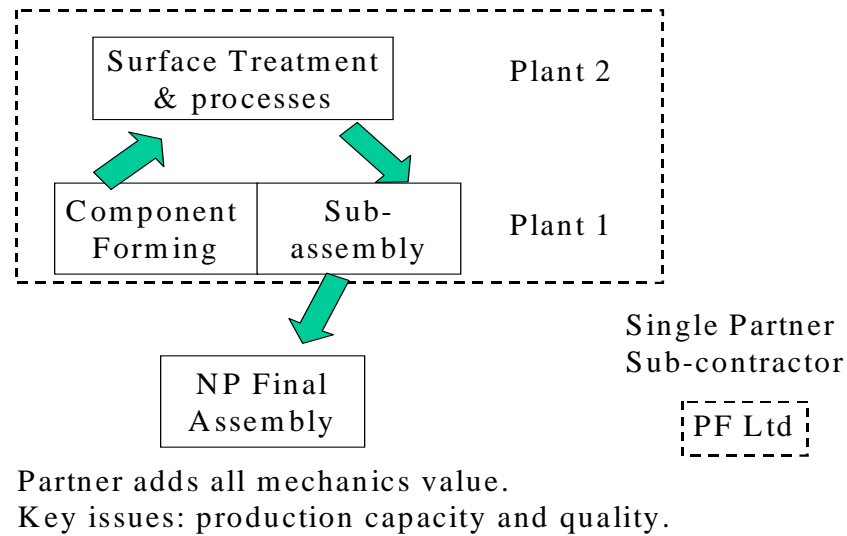
Component X became the bottleneck holding up production at NP. An intermediate solution was devised that relied on PU Ltd inspecting the components after each supplier had added its value, shown in figure 6.4. PU had to act as guarantor for the receiving contractor that the inbound components were of the appropriate quality. Any defects then created would be, at least in theory, the responsibility of the receiving contractor as a result of damage during its value adding operations. The main contractor returned damaged or otherwise rejected parts to the previous contractor for credit note purposes. PU was then in a position to determine the

amount of money owed to each company. This solution allowed the inbound logistics chain to supply the assembly plant with at least some of the part sets required.



**Figure 6.4 Intermediate Solution: Inspection Scramble**

This situation lead to restricted production volumes as a result of repetitive, and consequently inefficient quality inspection procedures, and insufficient administrative control systems to track batches of components. Gross volumes of the product were planned to be in excess of three hundred thousand units. During the production run, less than ninety-one thousand units were produced due to inadequate supply, damaged parts, and late delivery. To avoid this occurring on higher volume product runs for other regions, generic design changes were recommended and implemented based on the use of alternate technology solutions that allowed for a simplified supply chain to be developed, shown in figure 6.5.



Advantages: Better information flow, better quality planning,  
Supplier accountability, better production planning....

**Figure 6.5 Revised Inbound Mechanics Value Chain after Supplier Development**

It was decided that capabilities would be created in PF for processes not currently performed by them. This increased PF's percentage of the value-added processes without increasing their responsibility. This strategy aimed to simplify batch tracking and clearly assign accountability.

### 6.7.1 Lessons to Learn

Over the course of the sales window, the delayed ramp-up and the inability to deliver sufficient volume of acceptable component sets reduced the total number of products produced by more than 69.8%. This created a net financial loss for both production and the product development programme. The relationship with the principal downstream operator was also negatively affected by failing to deliver the batches on time.

Issues identified resulting from the lessons to learn study lead to recommendations to resource aesthetic component sets to PF, or YM and AAP, and re-engineer the supply chain. This required 1) the elimination of 'hand-offs' [461] from one company to another to ensure responsibility and accountability for order fulfilment, and 2) the elimination of special radio wave screening paints by adopting alternate hard state electronic screening methods. PF was

selected to supply components for a higher volume product. PF had facilities capable of European standard painting. NP elected to assist PF in creating capacity in various surface treatment processes that had previously been subcontracted. This constituted a supplier development project.

It was later learned that PU had become a contractor to one of NP's direct competitors. It is understood that this relationship made use only of PU, producing aesthetic finishes by in-mould decoration and multishot moulding techniques that used more than one polymer colour to produce parts for European markets.

The conclusions from use of the interpretations matrix identified that supplier's attitude and willingness to help were insufficient to produce the quality and quantity of goods required. These socio-relationship attributes were, however, perceived as a sound basis for additional skill training and technology transfer to promote the supplier's professionalism.

## **6.8 PF Ltd.**

PF is a strategic partner that provides NP with 45% of the aesthetic part sets it requires globally. PF owns and manages operations in North America, Europe and Asia on behalf of its clients. PF's clients operate primarily in fast moving electronic equipment sectors.

As a consequence of the poor supply chain performance from the PU case, NP co-invested with PF to establish an aesthetic finishing plant near the moulders' die making, moulding and component placement facilities. This strategy:

- Increased the value added within PF,
- Centralised ownership and responsibility issues,
- Allowed fuller visibility of yield losses,
- Concentrated NP supplier development partnership team's assistance

The principal difficulty in researching PF was the internal resistance within NP's product development team to allow what they considered to be non-core programme members access to the facilities. This partly was driven by the frequency of engineering change requests

implemented. Access to data also was difficult to obtain by the follow-on product creation programme. It became clear that implemented solutions to the design negatively affected the follow on program. This was primarily due to the lack of communication, haste with which solutions were generated and implemented and the late product launch. Consequently, this type of stand-alone product historically had caused significant obsolescence right-off costs at the end of the product sales window.

NP UK assisted PF to develop the processes and an understanding of the quality requirements defined as acceptable by the Japanese consumer at the point of sale. The NP product development programme requested a time-based production planning and monitoring tool from the researcher that was employed as a logistics project leader. This was produced and provided though was not adopted due to production visibility and the clear liability PK had to deliver volumes.

#### **6.8.1 PU and PF Conclusions**

The PF inbound supply chain was used to produce parts for a product released for sale in February 2000. Subsequent models based on this product platform for Japan market were cancelled due to rapid changes in electronic components, data processing technology and design divergence caused by late fixes.

The benefits derived from the investment in PF facilities are compounded by the use of this supply chain for high quality products destined for European markets that constitute the majority of the demand. This, it was considered, contributed to cost, delivery and quality competitive advantages over NP's competitors' products.

Learning and changes implemented at PF, supported by NP suggested that the access to PF issue related to psychological and philosophical preferences to 'hide the dirty laundry'. This

state seemed valid until improvements were achieved that allowed participants and the distributor's inspection committee to be satisfied with the technical processes and results.

A consequence of the lack of visibility to the decision-making process, the senior mechanical designer for the follow on programme was appointed as manager to implement a conditioning programme for engineers and designers associated with mechanical parts. The programme aimed to re-condition associates behaviour that had developed engineering routines that are unsuitable to multi-product concurrent engineering, and pre-condition those with less or no experience.

## **6.9 YM Ltd.**

YM is a Japanese company specialised in producing moulded parts. Its core competence is in flexibly producing volumes with diverse high quality aesthetic finishes. YM's core competence is in-mould decoration (IMD). The company consistently has been used as a principal aesthetic parts producer for cosmetics cases and by Japanese electronic equipment assemblers. YM subcontracted aesthetic painting to one of its strategic partners.

YM is a family owned business that operates five plants in Japan and one in Korea. YM ended a commercial partnership with a moulding company in France. YM sold its French holdings at the end of 1998 to protect its commercial secrets.

NP Japan had sourced part sets from YM for an aesthetically redesigned product that extended the electronic modules' production lifecycle. YM was not classed an NP partner. The company was visited to determine their ability to satisfy NP's requirements for a product that had been given approval to establish detail designs. NP anticipated the product would lead a series of related product families.

YM management made it clear they desired to re-establish a supply relationship with NP. To this end, the majority of the agenda was based on the courteous rituals and pleasantries associated with entertaining potential clients while precise details were not discussed. The meetings held were at YM's head office in Northeast Tokyo. Attendant were YM representatives at directorial and technical levels, NP UK and Japan purchasing and logistics responsible employees. The meetings were at the very earliest stages of a contract establishing process based on introductions, opening statements, fact finding and setting up positions for subsequent negotiation. The YM product show room displayed components produced by the range of patented process capabilities developed in-house that were on offer for NP's marketing and design to specify for Japan market.

YM's management made an overt display of the company's profitability by providing their NP guests with the company's chauffeur driven limousine and social lunches at an exclusive suburban restaurant. NP's purchasing manager recognised this as YM's conclusion that NP had difficulties achieving Japanese quality requirements with its established supplier and successfully had used YM previously. The purchasing manager concluded that YM were confident the immediate contract would likely be awarded to them. These preliminaries were therefore a means of moving NP toward consummating the re-establishment of a long-term relationship.

Enquiries into the process stability, reproduce-ability and repeatability were answered with statistical process control records that demonstrated that 'black belt' quality engineering assistance was not required. YM had been audited by NP in 1997, and found to fail on nine issues and according to the supplier accreditation database had not been re-audited. Despite this, it became clear that technical assistance to improve the production processes subtly was rejected by avoiding the issue and changing the emphasis of conversations.



To achieve concurrent product design, YM were requested to print-off a graphics file held on CD-ROM brought by the NP UK purchasing manager. NP agreed to set up a domain for YM with a firewall and restricted access rights to facilitate data transfer between sites.

Only one mistake made by NP was discernible after these preliminaries. This was associated with the augmented product rather than the core module components. During a tour of prototyping facilities, comments were made concerning polystyrene chips used as packing fillers. NP had updated its specifications to ensure components did not arrive to the assembly plant packed with these chips in order to minimise risks associated electrostatic discharges affecting microelectronic devices. The phrase used was "NP have recently specified these chips are to be avoided". Japan culture training courses had warned that the word 'No' was frequently avoided in polite dialogue. 'No' was avoided, though the statement used was considered a covert 'reprimand' rather than the simple observation it was meant to be.

### **6.9.1 YM Conclusions**

YM had demonstrated its technical capabilities and the opulence of a chauffeur driven limousine overtly displayed the fiscal results and market niche dominance the company enjoyed. These constituted a clear psychological demonstration that YM's capabilities exceeded NP's requirements. These indicators nullified NP's anticipated position of being prepared to offer technical assistance to develop YM as a supplier. This served to create a 'who needs whom more' scenario that positioned NP as the quasi-subjugated negotiator. This was particularly noticeable by observing the senior Japanese NP representative. In effect, rather than NP preconditioning the supplier for development, YM reverse conditioned members of NP's delegation.

Despite Japanese culture training, negotiations seemed remarkably similar to political manoeuvring rather than setting up a commercial relationship. This implied the need to have culturally astute specialists or natives leading rather than part of the delegation.

### **6.10 AAP Ltd.**

NP product road-mappers defined a strategic requirement to produce goods with 'real metal' aesthetic front covers. NP approached AAP to fulfil this requirement. Sourcing and Logistics introduced the product concept and emphasised the commercial relationship, logistics metrics used to define performance, and tooling development lead-times. NP commercial support people were there to assess if they would be 'comfortable' doing business with the supplier.

AAP Ltd is a wholly owned subsidiary of the Mitsubishi keiretsu specialised in stamping and forming to produce components from sheet aluminium. AAP's core process technology is aluminium anodising and surface treatments to produce a wide range of aesthetic parts for consumer electronic goods for branded assemblers. The principal subcontracted process AAP puts out to its strategic partners is aluminium die-casting and fettling. Yield rates for AAP's entire supply chain were in excess of 95%. AAP management demonstrated a co-operative attitude during the meetings and enthusiasm to provide NP with components.

An NP mechanical designer led a subgroup discussion for the design requirements, to agree technical compromises. A key limitation identified was that AAP only worked with aluminium. Under the keiretsu strategies, AAP specialised only in aluminium rather than expanding to work with other non-ferrous metals. The aluminium grade the company predominantly uses is a high purity ductile alloy. Component rigidity was provided either by supportive plastic moulded backings or by the component's profile and material thickness.

NP also were considering the use of magnesium thixo-moulding [462] and wanted to make use of AAP's anodising expertise to finish the parts. Thixo-moulding is based on magnesium

alloy paste-phase die-cast technologies developed by moulding machine vendors. The material and process are both unknown and unproven for high volume production runs. Key issues with magnesium are the need to have 100% anodised surfaces. These mouldings additionally require both surface-filling to achieve an acceptable form, and aesthetic painting. The primary reason to choose this technology was to increase Young's modulus and hence the axial torsion strength.

On further reflection, a Dural alloy with four percent copper in solution was recommended as a proposal. Dural is the alloy grade used to produce aircraft flying components. Properly heat-treated Dural is soft and ductile for a limited period before 'mar ageing' starts. Typically, this alloy requires low temperature storage in-bound logistics or annealing heat treatment prior to forming. Post operation heat treatment raises hardness and strength-to-weight ratios to be superior to some grades of steel.

NP rejected this proposal without stating justifications; in effect ignoring it. NP abandoned the possible contract with AAP and started a two-year development program with thixo-moulding equipment manufacturers and part producers in Japan and Canada.

#### **6.10.1 AAP Conclusions**

With the addition of temperature controlled in-bound logistics and post forming heat treatment facilities, AAP easily could have developed its business by entering the aircraft component supply market and thus reduced the apportioned process development overhead costs. NP's thixo-moulding advanced technology proving programme is of limited value to NP on a volume basis, being appropriate only for low volume premium products due to greater inherent costs and lower process yields.

Dual material strategies using both the thixo-moulding project and Dural proposals statistically reduce the associated risk. Polymer moulded components was the back up strategy.

A level of intransigence and group-think [463] was evident in this scenario. This was attributed to product creation programme associates' being preconditioned to promote and participate in research and technology (R&T), and advanced development (AD) projects. Fact based economic appraisals of the economic viability of the R&T and AD projects were secondary to the intrinsic gratification derived from such projects.

### **6.11 UDC**

Inspection criteria used throughout the inbound supply chain to assess aesthetic finishes were subjective, especially for scratches, blemishes and inclusions. Similar parts that would have been sold in Europe, for example, would be rejected in Japan due to the quality expectations of what constituted a defect.

UDC was commissioned to be the last chance filter for the sale pack. Their role was to test and visually inspect the core product to Japanese quality expectations. This was deemed necessary to ensure minimal open-the-box failures that would be detrimental to the trading arrangement with the operator and the distribution network. UDC had developed rework capabilities to replace aesthetic covers on behalf of NP. This was based on free-issue component exchanges with PU, PF and YM.

At the time of this research, twelve UDC employees were on permanent NP payroll and all other UDC employees were female casual labour that are employed during production periods. These production periods are dependent on NP's product ramp-up and release time scales.

The majority of consumer electronic device sales in Japan are through sole traders and small independent retail outlets. As a consequence, voluminous packing of consumer goods frequently demands unavailable storage space. Consequently, high-density master packs are specified. The distributor is the authority that sets common packaging specifications for all manufacturers. Sales packs produced by UDC are not directly sold to the end user. Instead, these packs contain five user manuals and five core modules. Supplementary packs are supplied containing all standard accessories. The consumer receives the goods purchased in a logo printed carrier bag that is designed in a similar manner to that obtainable from American fast food outlets. UDC's activities are unique within NP. All other markets use NP's global packaging standard.

Using digital still and motion photographic equipment, an industrial engineer working for NP photographed UDC operations during a plant tour. This provided the evidence required to disparage UDC to NP employees. This data and the manner in which it was used served to negatively precondition NP associates in both product creation and operations.

UDC adds value by designing and producing the packaging materials on behalf of NP. This arrangement also reduces the required cubic capacity of airfreight from NP to Japan.

Due to the increase in specification and functionality, the user manuals increased in thickness. Concerns were raised and questions asked to define these changes. This was sufficient justification to warrant a visit to UDC.

The overt justifications for visits to UDC were threefold. Firstly, to establish a working relationship and direct communication routes. Secondly, to review UDC operations, and thirdly, to investigate, agree and report UDC' activity plans to the product development programme management in the UK. UDC management's core concern was a lack of visibility of NP's generic business model and when the next product would be ramped up. These issues were clarified during the first research visit. A result of the second research visit was a

generic plan defined and owned by UDC to design the packaging. The durations of activities was calculated backward from the expected launch date. The second visit proved timely as the plan required UDC to start the following day.

#### **6.11.1 Conclusions from UDC**

NP associates had begun to precondition the company's perception of UDC. The strategic requirement for UDC to act as a last chance inspector was being removed as a result of supplier development with PF. Associates at NP Japan have strong bonds with UDC. As part of the medium term strategy for change, NP recognised that preconditioning is required directed at NP Japan associates to prepare for the abandonment of the relationship.

### **6.12 Use of the Interpretations Matrix**

For each of the companies and dyadic relationships, an Excel based version of the interpretations matrix described in chapter 5 was used as the notation and analysis platform. Due to the company sensitive nature of this information, these have been withheld from the thesis. Representative data is shown as a substitute in appendix 5.

#### **6.12.1 Conclusions from the use of the Interpretations Matrix**

The interpretations matrix was used as a 'think pad' to note attributes in the relationships at individual participant, organisational, direct and support activity levels. The primary use for the matrix was to categorise and tidy the information, thereby pigeonholing data in an organised form for later analysis.

The matrix provided support during analysis for preconditioning programme with M E Ltd, NP, PF and UDC. A reverse conditioning process from YM to NP was identified from data recorded on the matrix.

### **6.13 Chapter Summary**

This chapter outlines participant research with NP, its suppliers and a downstream distribution centre.

Key examples of preconditioning occurred during:

- Employee selection interviews via psychometric testing and stress inducing interview techniques.
- Seminars focusing on the individual's preferred modes. These included Belbin's Team Roles, Myers Briggs type indicators, Working-Together, outward-bound team building events, 360 degree feedback, and one-to-one mentoring.
- Potential performance improvement search conferences.
- Visits to suppliers to present situations and complications. Then facilitating suppliers to examine the scenario, identify activities, plan schedules and agree goals.
- Lessons to learn reviews undertaken near to ramp-down of existing products, in order to identify corrective actions, training required, guidelines and activity lists.
- NP management recognised the need to appoint an engineer to a managerial role in order to overcome difficulties associated with information and decision transparency in a concurrent engineering environment.

It was identified that supplier's attitude and willingness to help were insufficient to produce the quality and quantity of goods required. These socio-relationship attributes were, however, perceived as a sound basis for additional skill training and technology transfer to promote the supplier's professionalism.

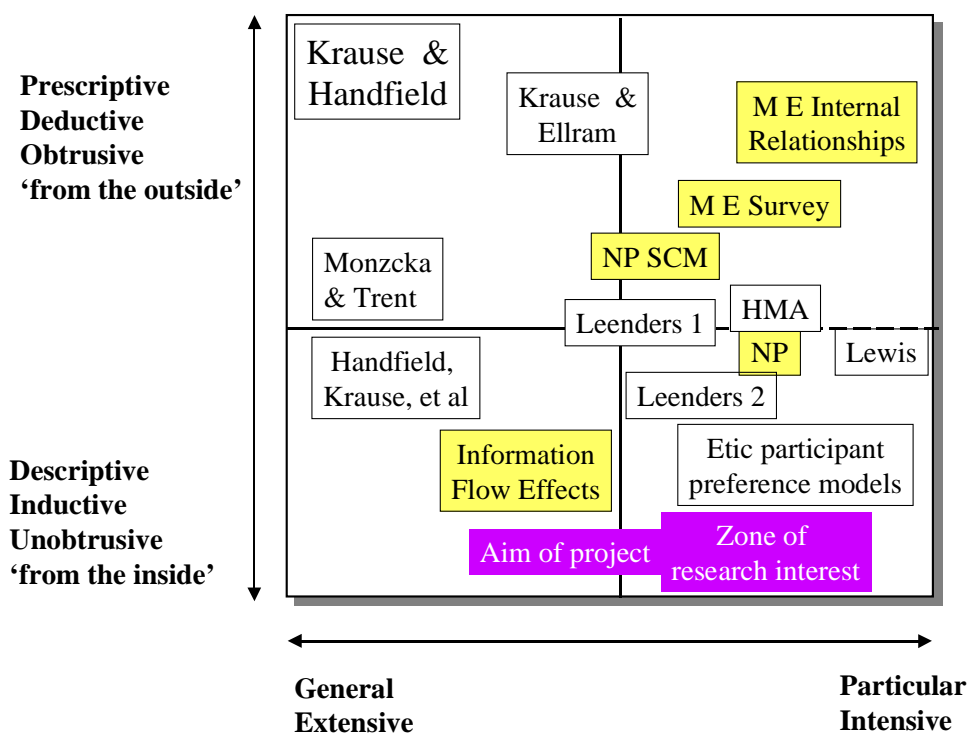
Group-think and existing preconditioning toward an internal task-based focus hindered building relationships with strategic suppliers. Implications of this are that strategic level goals should emphasise internal effectiveness and links with partner companies.

# Chapter 7

## Discussion

### 7.1 The Research in Context

Figure 7.1 plots subjectively assessed comparisons of literature contributions on the framework of research methods by Gill and Johnson by:



**Figure 7.1 Research Methods in Context**

- Leenders, [464]. 'Leenders 1' represents the strategic functional level describing business to business scenarios that form the basis of supplier development. Leenders' work is the basis of subsequent generic purchasing relationship and supplier development qualitative purchasing literature. 'Leenders 2' represents the participant to participant scenario descriptions included in the case studies. These are the earliest found records describing the difficulties to overcome supplier's resistance to customer's improvement initiative proposals.
- Monzcka and Trent's survey, [465]
- Krause and Ellram's survey, [466]
- Lewis's work at Wooton Engineering, [467]
- Nelson Mayo and Moody's study of Honda Manufacturing of America (HMA), [468]
- Krause and Handfield, [469] and
- Handfield et al [470].



Research work undertaken as part of this programme also is plotted on figure 7.1 to highlight the aim of the research and actual approaches used.

- Information flow effects refers to three models identified during the initial phase of this research [471].
- M E survey is the subject of appendix 1 and 2 of this thesis.
- M E relationships is the subject of chapter 5.
- NP, NP's supply chain, and researched suppliers and distributor are the subjects of chapter 6.
- The etic participant preference assessments and workshops are integral parts of NP's employee development and leadership initiative.

M E Ltd, PU, PF, YM and AAP are all aesthetic component manufacturers. M E Ltd has the opportunity to rework parts. NP requires that no rework is undertaken, and rely on first-time yields for their production. For all these suppliers, statistical process control is appropriate only for the component geometric sizes.

## **7.2 Common Elements of Supplier Development Programmes**

Common elements to implementation methodologies examined in this research are listed based on Precedence and Response. In effect the list below is a representation of relatively re-active organisational system behaviour:

1. Situation,
2. Stimulus Recognition
3. Response Possibilities Identification
4. Response Consideration, Recommendation and Selection,
5. Decision
6. Response Preparations: Current state assessed, direct elements identified and support elements in place
7. Response Actions.
8. Intervention effectiveness and efficiency feedback to previous elements.
9. Reporting.
10. Post Phase Review.

These ten phases are further expanded below, to identify the focus areas and specific types of activities that are undertaken by manufacturing businesses that have proprietary design, system integration and development capabilities:

1. Situation,
  - Understand the historical chain of sequences that has lead to the present position.
  - Understand the present position: understand customer needs, current and probable product mix by technology and volume split, future total volume capacity constraints and requirements,
2. Stimulus Recognition
  - Extrapolate current trend(s) and determine where measures will be required to be in order to remain competitive. - Find information that supports the argument.
  - Examine potential change forces; likely timing of changes based on monitored trends, synthesis of competitor's activities,
3. Response Possibilities Identification
  - Assess current policies, strategies, objectives for relevance to roadmap
  - Examine current policies, strategies and objectives to identify underlying assumptions
  - Examine conflicts created by the assumptions
  - Develop potential alternative assumptions by iteration; base this on extending, contracting, combining, separating, sequencing, exaggeration, antonyms
4. Response Consideration, Impact Analysis, Recommendation and Selection,
  - Assess attitude to change, improvement, development
  - Determine the type of value(s) drives success in the business
  - Define values and key measures of success
  - Define corporate goal and objectives;
  - Decide to make preparations in secret, or publicise that the change program is coming to the entire company. Oversight and union committees may be invited to comment and later informed of the final decision and initiative direction.
  - Devise and install/ensure that a reward system supports corporate goal and objectives.
  - Define product type and technology roadmaps
  - Clarify the company's core business activity area (*Value creation activities*: information gathering and review, concept creation, solution examination, tactical optimisation, planning (Planning includes long range volume forecasts, intermediate term commitments, short sequencing and synchronisation), suggestions, designs, working assumptions, models, simulations, cause and effect analysis, agreements, facilities and end to end supply chain preparation; *Value-add activities*: sourcing, operations, distribution; best practice identification)
  - Define new product attributes, characteristics: product range requirement, variant control (Minimising hardware component variants, maximising value add via late implementation of software variants),
  - Based on the core business activity area, define, plan, resource and implement strategic advanced development activities and programs, in order to create a buffer of technology, knowledge, off the shelf solutions, capabilities and designs.
5. Decision
  - Secure access draft version of proposal review period
  - Comment collation, evaluation, and review; inclusion to draft version, modification, decision to delay inclusion to later phase, rejection.
  - First formal proposal version completed. Include outlined macro resourced activity plan; a sequence and schedule of intervention opportunities, budget, benefits and payback analysis.
  - Presentation to sponsor.
  - Sponsor's comments, feedback, request for modification, commitment, rejection.
  - Second round review. Permission to go to next stage, phase, milestone.

6. Response Preparations: Current state assessed, direct elements identified and support elements in place
  - Defining project's terms of reference; objectives; scope; focus; key success and completion indicators;
  - Define degree of freedom to be made available; reporting conventions;
  - Develop a structured programme to accomplish the objectives [472] within the boundaries of the constraints.
  - Select team leader
  - Define roles, job descriptions, expectations and desired team member attribute descriptions.
  - Cross-functional team creation - recruitment processes supported by HR.
  - Define and agree internal team operating rules, norms, conventions, objectives and time scales
  - Assigning responsibilities;
  - Design an optimised logistics chain consisting of inbound, operations and distribution. Base this on existing and roadmap product creation projects.
  - Create a detailed plan of requirements.
  - Confirm sponsor's support.
  - Identify, audit, assess and select external parties that are likely to be involved.
  - Identify the delta between current state and optimised logistics chain.
  - Identify in-house, relationship and partner specific inhibitors, facilitating technologies, training and content of coaching required.
  - Prioritise efforts based on key criteria, e.g. new products, new suppliers, highest spend, most suitable attitude and behaviour, highest volume, lowest technology, most potential benefits (based on feedback from lessons to learn stemming from benchmarking products and processes), others. Decide on most appropriate sourcing dependence strategy: adversarial, single, sole, dual or multisourcing.
  - As a prerequisite of the new relationship, both parties have to reach an agreement on how they will work together (i.e. establish the ground rules) [473]. This may include face to face presentations, visits by both parties to each other's premises, reviews of the product and services, answering questions and queries.
  - Carry out a critical review of the key aspects of activities that impact on other internal and external parties. Include specifications, communications, training and organisational roles [474].
  - Evaluate, modify and select the measuring/auditing instrument to be used to evaluate supplier current state. Ensure the instrument includes areas defined by QS9000, Malcolm Baldrige/European Quality Award, policies, procedures, systems, information technology infrastructure and barriers to data transfer. Other criteria can be assessed such as attitude, performance, productivity, lead-times for production and prototype parts, defect rates, capacity, flow charts, control plans, plant and facilities, quality systems, financial stability, response, tooling, planning and handling. Samples may be evaluated.
  - Provide feedback in the form of conferred status.
  - Agree policy on frequency and specifically when follow up assessments will be undertaken. This may be based on current performance and status, type of products supplied, at major changeovers (for example of product, management, facilities), request from suppliers, to coincide with other events, and at the end of a certification period.

- Involve external parties early in the specification of parts to increase the likelihood that these parties will accept responsibility for warranty costs of parts they produce [475].
  - Identify generic implementation potential risks, solutions, resource requirements,
  - Record what the CFT members already know.
  - Micro activity simulation, sequencing.
  - Identify what knowledge may be required by internal gap analysis.
  - Commission an ideal transferable knowledge pack; this can be developed by the CFT, by consultants, taken from the parent company, from an academic source.
  - Pre-requisite and generic knowledge transfer - between the CFT members, by consultants, by non-core team secondees, by partner suppliers, by Parent Corporation.
  - Pilot intervention preparation.
7. Response Actions.
    - Announce schedule of pilot intervention opportunities.
    - Target selection, invitation,
    - Target's choice of scheduled intervention opportunities
    - Industrial tourism: visits to exhibit companies from non-competing enterprises renowned for their capabilities
    - Define benchmark data that are to be made available.
    - Reengineering: Design the core value-adding processes including types of flexibility
    - Pilot intervention delivery, review.
  8. Intervention effectiveness and efficiency feedback to previous elements.
    - Intervention feedback, modification.
    - Intervention promotion (Awareness notices, target audience advertising, tiered down passing on of notices, policies and opportunities), and macro role out. Announce schedule of full-scale intervention opportunities.
  9. Reporting.
    - Frequent or continuous monitored indicator measurement recording.
    - Periodic status reports for management control.
    - Exception reports for rapid response consideration.
  10. Post Phase Review.
    - Lessons to learn reports; sharing experiences, perceptions; identifying areas of opportunity to increase networking, communication effectiveness.
    - Process formalisation.

## 7.3 Preconditioning

### 7.3.1 Clinical conditioning and reconditioning

Described in section 5.12, conditioning and reconditioning are used in clinical psychology.

The subjects tend to be animals, children with specific fears and adults with phobias.

Subjects are conditioned by association. Eating caused dogs to drool. Non-threatening queues such as bells were rung before eating. It then became possible to make the dogs

salivate by ringing the bell [476]. A child was cured of the fear of furry animals by eating chocolate while a kitten was introduced into the room. Eventually, the child began playing with the kitten. This was attributed to the association with eating nice things. The work was extended and the child eventually overcame fear of all animals. The approach draws on an assumption that there is a link between doing and feeling.

These clinical practices aim to overcome specific behavioural attributes. There is scope to apply similar techniques in social quasi-experiments in intra- and inter-organisational settings.

### **7.3.2 Nevantie's Focus for Preconditioning**

Described in section 5.12, Nevantie's perspective on preconditioning focuses on sharing information among developers and the evaluation of requirements in comparison with available solutions. This perspective is limited to the preparation of required training materials that are otherwise unavailable. Nevantie's description is satisfied by alternate terms including 'training needs analysis' and 'training materials and course preparation'.

### **7.3.3 This Research's Focus on Preconditioning**

This research project focused on preparations undertaken by prospective recipients prior to improvement training. The research identified preconditioning occurred:

- In-house within both M E Ltd and NP Ltd. The focus group at M E Ltd preconditioned themselves to accept being blamed, and by fabricating processes, procedures, forms, strategies and decisions as the basis of an audit trail for their customers' supplier assessors. NP preconditioned associates as part of their revised manufacturing appreciation training scheme. Operations, Logistics and Sourcing staff underwent a series of courses to re- or pre-condition in order to create the potential to sustain peak performance. NP also in created a management position to re- and precondition mechanical engineers to work more successfully in the company's concurrent engineering projects.
- Based on photographic records, an NP industrial engineer attempted to precondition associates with negativity toward UDC, in order to avoid developing them and bring the value added work in-house.
- From NP to some of its suppliers.

- In reverse from YM to members of NP's delegation.

A hypothesis formed as a result of this research is that processes involved in preconditioning and reconditioning are similar, in respect that should an associate undertake a similar project, lessons to learn would have been incorporated into the working methods and project plan that constitute the approach to work.

#### **7.4 Proposal of a Procedure to Determine Extent and Recipient of Preconditioning**

Procedurally based initiatives to increase the number of implementations of the preconditioning concept using the interpretations matrix could be based on the following key steps:

- 1) Identify Sources and Targets
- 2) Undertake a survey to determine quantitative values that gauge the motivation and goals of both Sources and Targets.
- 3) Correlate the data using the interpretations matrix.
- 4) Identify gaps between motivation and targets for both Sources and Targets.
- 5) Relate the quantity and type of preconditioning to the identified gaps.

It is anticipated that some elements of preconditioning will be common to all initiatives. Others likely will be either elective, mandated by senior management based on systematic job description analysis or appraisal based.

The survey and action based research with M E Ltd, combined with participant observer research at NP Ltd, provide a level of confidence that the process will be valid.

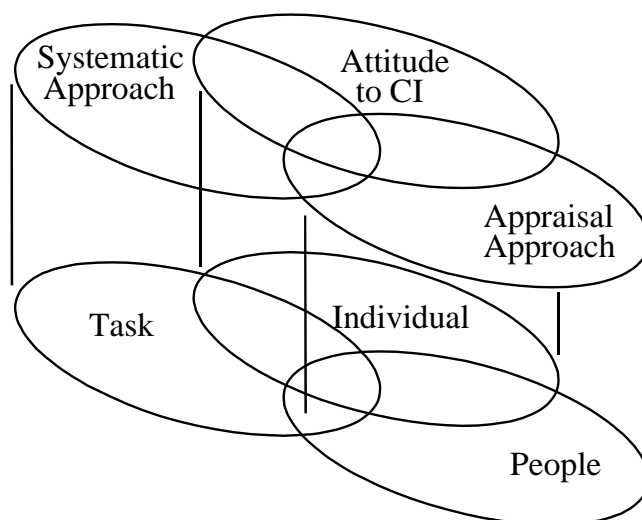
#### **7.5 Barrington's Model Reviewed**

Barrington's model [477] is now questioned. The model suggests using a systematic approach based on techniques, a dynamic approach using appraisal, and the development of an attitude for continuous improvement are sequentially higher levels toward world class improvement initiatives.

The cases reviewed suggest that a hierarchy is not always the relationship between these approaches. An alternative model is based on the triangulation of techniques described in section 2.2.1 of this thesis. This line of reasoning is based on the following observations:

- M E Ltd had few techniques, and awaited systematic supplier development. They also did not have appraisal systems. They did have an attitude for continuous improvement, and this was enhanced with preconditioning to accept change and manage the blame culture.
- NP focused on the creating the attitude during recruitment and via awareness training courses. An appraisal system for both suppliers and associates was already in place. NP started to role out systematic techniques after the start of the awareness training that ran concurrently.
- AAP had the attitude and systematic techniques, yet did not have appraisal systems.

The case studies in this thesis suggest companies can have any two of Barrington's 'levels'. This suggests that a hierarchical relationship between them is incorrect. Shown in figure 7.2, an alternate proposal, is based on Adair's model that uses three intersecting circles to indicate relationships between the individual, the group and the task [478]. Equally valid is the metaphor 'pillars of success'. The cases indicate that preconditioning can occur within a company, from customer to suppliers and from suppliers to customer.



**Figure 7.2 Adair's Leadership Model and an Alternate Depiction of Barrington's Proposal**

## 7.6 Strategic Guidelines

The aim of this research was to produce strategic guidelines for supply chain development. This research has identified that strategic guidelines are appropriate to specific attributes of the holistic strategy required to create competitive advantage. This research has focused on preconditioning prior to implementation strategies and joint improvement initiatives. The number of cases is limited and thus impacts on the validity of strategic guidelines produced from this research.

An identified source is the United States' National Research Council (NRC) [479]. The NRC produced recommendations that can serve as guidelines for strategies to achieve enhanced quality, cost and value, delivery, service, management skills and human factors, and technology. The NRC guidelines broadly correspond to the systematic approach identified by Barrington.

The Myers-Briggs balanced strategy, outlined in chapter 4, provides a generic analysis and implementation plan for cross-functional intra- and inter-company improvement initiatives. The balanced strategy can be used independently of the type indicator seminars. More importantly, the strategy can be used with other type indicator instruments, for example Belbin's team roles (BTR).

## 7.7 Interpretations Matrix

The matrix presented is a general model and thus suffers all the weaknesses of general models. Fields on the Target axes have been used with a range of emphasis. The matrix has been applied to inter- and intra-organisational scenarios. The organisational relationship elements contractor, partnership, co-operative, cartel, monopoly and alliance were least analysed. This was primarily due to an emphasis on design *for* rather than *of* logistics.



Specific elements identified as missing from the interpretations matrix developed with M E Ltd that would contribute to producing a more generic framework include:

- Communication routes and equipment, message formulation strategies and pro forma templates
- Materials, bill of materials, specifications,
- The identification of metrics
- The matrix in itself does not describe a specific supply-chain management situation to the level of detail required to make general guidelines. The matrix identifies some of the classes of variables that require elaboration by theoreticians and practitioners of supply chain management.

Generality offers, however, a set of compensating benefits. Recording scenario observations on the matrix provided a database of company specific information, and led to the identification of the logistics scenarios that were later quantitatively analysed. Significant scientific progress as a result of research into demand/supply chain relations will come only from systematic analysis of specific variables associated with relationships within a given type of scenario. This general model was developed from the preconditioning initiative at M E Ltd. Based on the strategic requisite that decisions are fact based, the matrix assisted in mapping NP Ltd's scenarios.<sup>1</sup>

Effective supplier development is in part dependent on:

- The stability of the product development roadmap, and
- The ability to draw from individuals, working in Target companies, recognition of their own conclusion that they require additional training.

## **7.8 The Relationship between Product Roadmaps, Product Development Programmes and Supplier Development**

P/D ratios define a relative comparison between the time to complete a product from the time the order is raised and the time period that the customer is willing to wait for delivery of the goods. P/D ratios focus on the short-term time scale and assume the product has already been

designed. Having available tooling, stock parts and work in progress can reduce production time.

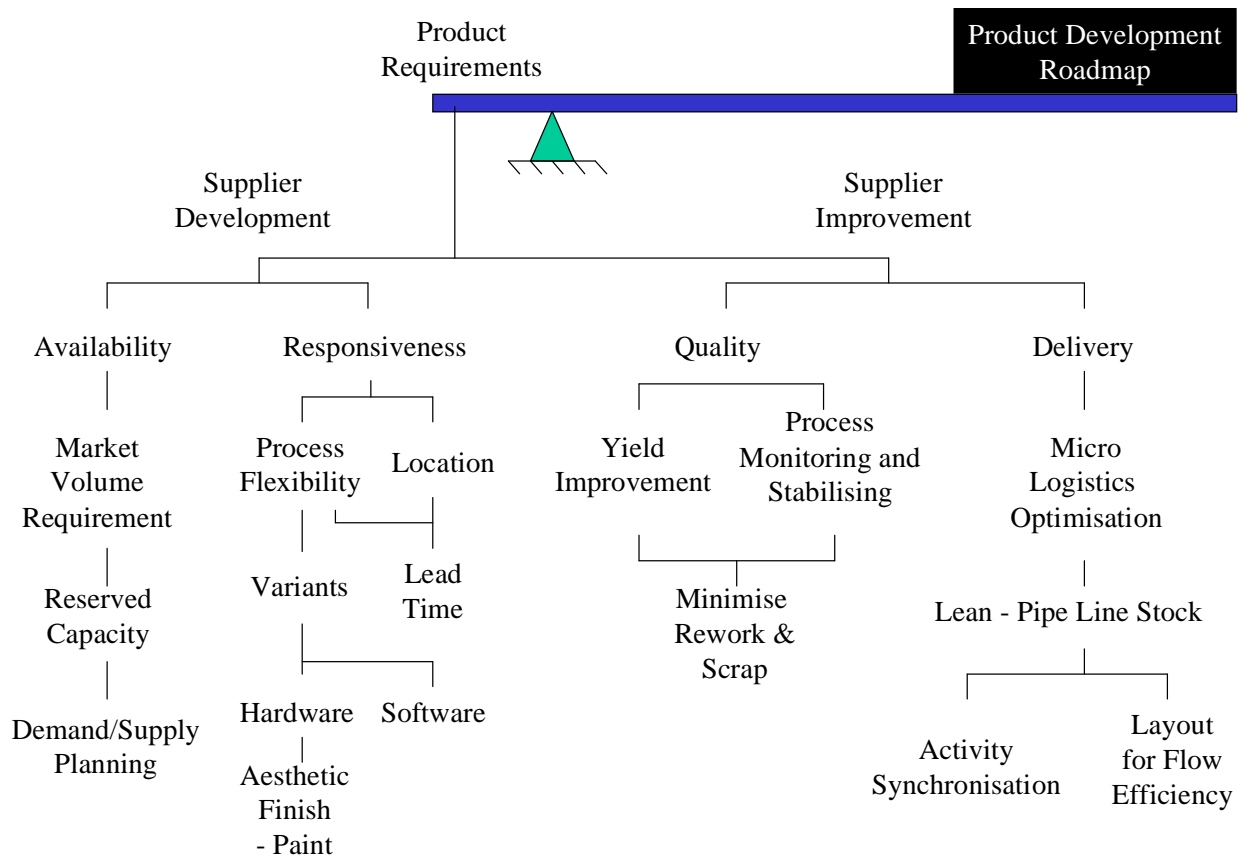
A longer-term ratio can also be identified based on the time to design and manufacture a product from scratch, and the customer's delivery expectations. In this context, the customer is almost exclusively a business or a market rather than an individual. Concurrent engineering is used to reduce the design and manufacture cycle.

Strategic changes were made each quarter or half-year to NP's roadmap that forced the cancellation of product development programmes or modified their focus or role. Sourcing representatives in each product development programme worked on identifying suppliers, negotiating, arranging non-recurring expenditures (NREs) for product development and evaluative studies and prioritising improvement and development. Figure 7.3 uses the metaphor of a mobile to depict conceptual relationships identified as a result of product development roadmap changes for sourcing.

In the second collaborating establishment, NP Ltd, although solutions had been enacted, quartile changes to product roadmaps based on market shifts impacted the solidity of the created relationships by refocusing product development programmes' efforts to alternate materials and technologies.

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<sup>1</sup> Data recorded while analysing NP Ltd has been classified as company confidential, and thus retained by the company.



**Figure 7.3 Conceptual Structure of Supplier Improvement and Development and Relationship to Product Development Roadmaps**

Changes to the product development roadmap created the following identified effects:

- Loss of trust, onset of scepticism and cynicism
- Sourcing didn't push as hard to get concessions
- Suppliers chased contracts more likely to convert to high volume orders
- Reduced motivation over the transition period from the cancelled to the new project. A lot of the work that could be 'recycled' was carried over.
- Soft and provisional hard tooling had to be written off due to market specific styling changes.
- The roadmap change put back the ramp-up date for the revised product. The new product had higher specifications that allowed the close of the sales window to be put back. The assembly plants continued to produce existing models or ramp-up products from other development centres for different markets. Delayed product releases reduced demand for the brand because the brand was not being advertised or taking shelf space.
- Suppliers sought to guarantee their profit margins by focusing on high volume, low margin ranges. A degree of frustration was noted from suppliers that preferred to sell machine utilisation rather than focus on extending the technical

specification and knowledge boundaries associated with the low volume, high specification Japan market requirements.

- Volume planning accuracy measured in a standard manner consistently was lower than comparable product development sites. Obsolescence costs were consistently higher as a proportion of turnover.
- It became necessary to design the product increasingly for process flow lines that had been built around other products idealised flows and to other regional customer's requirements. Generic layout 'crazy lines' were then required that allowed several low volume products for different market regions to be built with relatively short changeover lead-times. In conjunction, each product development site began to develop site specific strategies.
- Demand-supply chain reengineering project proposals were abandoned.

## 1.9 Summary

This research examined intra-company relationship aspects of improvement programmes within a collaborative establishment. An interpretations matrix identified as a result of this work was the basis for inter-organisational programmes aimed at enhancing industrial organisations' performance.

Secondary testing of the matrix has been undertaken.

In conventional supplier development, promoters tend to be the assemblers while recipients are first and second tier suppliers. The most documented supplier development programmes are promoted by industrial and service sector purchasing functions in large organisations. Terminology in this research for Promoters is the *Source*, and for recipients the term *Targets* is used. The strategy of how information, skills and abilities are transferred is the *Process*. Re-review of the literature verified the use of the terms Source, Target and Process.

## 7.10 Contribution to Knowledge

The original and distinct contribution to knowledge developed from this programme of research is the identification of the non-hierarchical relationships in the systematic approach, appraisal approach and the attitude for continuous improvement defined by Barrington.

This is based on seven original case studies and critical analysis of literature. The significance of this research is that organisations should undertake a current state analysis to determine their strengths and weaknesses, and thus determine the emphasis for their own preconditioning programmes.

The research also identified a conceptualised relationship between product development roadmap stability and the effectiveness of supplier development and improvement programmes.

## Chapter 8

# Conclusions

The thesis reviews strategic supplier development initiatives and contrasts them with an Institute of Personnel and Development three-attribute model by Barrington. This suggested that supplier development described in the literature relies on the systematic and hence least effective approach. Core to successful improvement implementation is the approach adopted toward the relationship.

Promoters of supplier development are not necessarily those that will eventually implement the changes.

Supplier development is most typically perceived as a dyadic interaction occurring through the supply chain.

From the Rocio scenario [480], case studies in chapters 5 and 6, and analysis of information flow effects [481] it can be conjectured that a triadic relationship typically provides greater performance.

A key source of challenges to effective supplier relationships stems from the stability of organisation's product development roadmaps that set the agenda for concurrent engineering.

A conceptualised 'mobile' of the relationships involved is identified.

The interpretations matrix served as an efficient data-recording instrument for later strategic analysis. Several elements were identified as candidates for inclusion on the axes. A flexible framework for the comparison of concepts and managerial change models is of potential benefit to improve communication between the promoter, recipients and other stakeholders.

The thesis concludes that the development methods matrix outlined in this work is a contender for the role of supporting conclusions stated above.

Adequate understanding and ability to implement change initiatives is required to successfully achieve world class results. This requires that a set of agreements have already been established - recognition, procedural and substantive.

Literature arguments in chapter 3 assume a current state and short-term rectification of educational and skill deficiencies. Longer-term solutions to resolve educational and skill deficiencies include:

- Sharing applicants with other networked companies in the supply chain, by identifying recruitment requirements, sharing the cost burden of training craft, technician, engineer and administrative level employees. The act and policy of sharing applicants reduces pressure to poach, increases the economies of scale for selection, recruitment and education. This avoids losing the applicant to non-related industries or worse - to competitors' supply chains, and provides a wealth of company visit and tour-of-duty opportunities for apprentices, trainees and mature learners. Further, this also should reduce the 'them and us' attitudes inherent as a result of more strictly defined business boundaries.
- Dividing labour into regionally specialised roles dependent on the demographic ethnography, especially for administrative activities where direct contact is not essential and information is transferable electronically.

A conclusion identified as part of early research work with the first collaborating establishment was that "success depends more on the preparedness of managers than on the systems themselves. Therefore as much effort should be invested in preparing the system users as in the systems" [482]. This in part supports the general conclusion that a preconditioning programme merits further elaboration and implementation.

A generic structured and participant focused implementation strategy remains elusive. The emphasis upon supporting participants to define their own strategy thus is concluded as essential.

In summary, it has been demonstrated in the case study companies that the hypothesis that a preconditioning programme for supplier development provides support is valid. In terms of the aim to produce strategic guidelines for supply chain development, the conclusion is that in order for supplier development programmes to be successful, application of the improvement matrix will lead to an understanding of the:

- Sources of improvement initiatives under the title supplier development and
- Targets who are required to implement the changes.

Detailed analysis will lead to an understanding of the motivation and goals of these parties and a further analysis of the motivations behind these parameters will lead to recognition of the degree and type of preconditioning that needs to be applied to either or both parties (Source and Target).

The objectives of this thesis were:

- 1) To recognise current methodologies by examining publications.
- 2) To identify hybrids, variants and options in use, their causes and applications across industries.
- 3) To produce a model with options, applicable to a wide range of industries, by refining the original model, adapted ideas, concepts and applications.

Objective 1 has been fulfilled in the literature survey in chapter 3.

Objective 2 has been fulfilled in the literature survey in chapter 4.

Objective 3 has been fulfilled through the conception, application and testing of the interpretations matrix, described in chapters 5 and 6.



## Chapter 9

# Further Work

### 9.1 Introduction

This research predominantly took an emic stance to inductively understand Target participants' current behaviour and antithesis responses by Source participants. This allowed Sources to focus on the Sources' own behaviour improvement efforts, to ensure a style that does not engender negative hygiene factor responses in Targets. Further work should ideally focus on etic analysis based on the mechanisms involved to transfer imposed external logic frameworks to Targets, and construction of a predictive nomothetic model that identifies probabilities of future styles and responses based on pre-existing key indicators of human behaviour. This would result in identification of methods and guidelines to influence Targets away from adverse or undesirable behaviour, while promoting positive interaction between Source and Target. A self-help package or taught course would likely be resultant from undertaking this type of research and consultancy.

Hooper [483] identified the correlation between corporate culture expressed by the values in a businesses' mission statement and the performance of that business. Given that the people make up the organisations' culture, there is likely to be some consistent correlation with the terms and conditions associated with the contracts issued by companies to candidates for positions of influence in those businesses. Further work in line with this hypothesis requires grounded analysis of contract terms and conditions of employment issued by companies and correlating this data with:

- Type, grade, experience and qualities of candidates
- Determination of the degree of role specialism, position in the corporate structure and associated responsibility, accountability and authority

- Determining the point when the new employee is considered as adequately trained and skilled to perform the duties associated with the task without significant coaching
- Company performance

Suppliers reviewed in this thesis produce aesthetic parts. Techniques including statistical process control are only relevant to the geometric sizes rather than the aesthetic quality, which is subjective. Further work should identify if a relationship exists between supplier's emphasis on geometric size or aesthetic quality and the emphasis on systematic approaches or the attitude toward continuous improvement.

## **9.2 Bibliography**

Late during the preparation of this thesis, it became clear that studies had been carried out by Odaka, Ono and Adachi [484] concerning ancillary firm development, and by Nelson, Mayo and Moody [485]. These references were not identified earlier due to their oblique titles. Due to time constraints, these books have not been reviewed superficially. Further work is required to investigate these qualitative descriptions and re-evaluate the existing thesis accordingly.

## **9.3 Further Use of the Interpretations Matrix**

Further use of the interpretations matrix would likely benefit from analysis of the relationships between the intersections. From this, it may be possible to depict generic types of relationships. This might then be the basis for selecting guidelines using an expert system based architecture.

Use of the matrix in non-manufacturing environments may serve to identify other sets of Targets and Process elements. Further work should also consider alternate stages to Barrington's model [486] for change.

## 9.4 Triadic Models

This thesis has used the conventional dyadic relationship between customer and supplier. However, a series of triadic relationships has been determined as a useful approach or solution. Further work on the triadic relationship dynamic examined in figures 5.1 and 5.2 were anticipated to focus on a single supplier and two competing assembler customers. Instead, a scenario was identified and a research contract made with NP Ltd based on the triangular relationship dynamics between a product development site, suppliers and a final assembly plant. This was the basis for work with NP Ltd and its supply chain, discussed in chapter 6.

Qualitative analysis should be undertaken with the set of dyadic and triadic models depicted in exhibits 1 and 2, attached in appendix 6, to examine the relationships between the assembly plant, product creation programmes and the supplier base. One objective of such an analysis would be to identify criteria by which to assess world class product creation and delivery processes.

A detailed analysis should be undertaken to validate the hypothesis behind the relationship model depicted in figure 8.2. Objectives would be to 1) highlight the relationships between manufacturing supply chain performance and frequency and extent of the product roadmap changes, and 2) quantify the sensitivity of financial lost opportunity in terms of profit and turnover as a result of delays.

## 9.5 Related research programmes

- Undertaking an assessment of conventional supplier development based on the strategic principles that are the basis of the Institute of Personnel and Development policy. A UK survey to compare perceptions from purchasing, training and personnel managers on the theme of supplier development implementation success would complement this.

- Case award research programme to analyse and verify a hypothetical relationship between product roadmap stability and supply chain improvement initiative effectiveness.
- Psychological profiling of Sources and Targets. The aim to identify attributes at various levels of acceptableness and strategic desirability.
- Major collaborative research programmes with other institutions, particularly in economies that provide a stark contrast to the economic conditions present in Western countries. Prime locations for such research would include former Eastern Block countries and Asian Tiger economy countries including China.
- The model should be applied in a larger number of companies in order to explore the precise nature of the relationship between Source and Target's motivation and goals, and comparison of the degree and nature of preconditioning required in various economic environments.
- Manufacturing sector differences, for example automotive, aeronautical, white goods, electronics, capital goods should be further explored. Application to the service and public sectors should be considered.
- Application of this methodology should be in companies where the economies are developing:
  - 1) From an established manufacturing base which has been subject to neglect of quality, cost and delivery criteria, e.g. Eastern Block countries; and
  - 2) From a manufacturing base where transplants are introduced to take advantage of cheap labour and raw materials such as China.
- Development of the detail of the common elements of supplier development programmes (section 7.2) to relate these to the evaluation of motivation and goals of both Sources and Targets. This would enable a clear quantification of the mismatch and type of preconditioning required to undertake a successful supplier development programme.

- Based on the limitations of Sheth's model (figure 3.5), the methodology should be developed to allow suppliers to gauge customer's requirements and autonomously respond.

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Newlands, David and Southey, Phil. “Material Supplier, Component Supplier and OEM Information Flow Effects” 10th National Conference on Manufacturing Research, Loughborough University of Technology, September 5-7<sup>th</sup>, 1994, pp 14-18.

Southey Philip J. and Newlands David J. “Supply Networks: Can Customers Drive Supplier Improvements?” 10th International Marketing and Purchasing (IMP) Annual Conference - Meeting the Challenges of New Frontiers - Groningen, The Netherlands, Sept 29 - Oct 1, 1994, Volume 2, pp 433-444.

Newlands, David., Davis, Alison. and Southey, Phil. “Motivation To Change the Supply Chain” 4th Annual IPSERA Conference, Birmingham UK April 11-12, 1995, in the volume of Manufacturing and Production Procurement.

Sherwin, Garry. Newlands, David J. and Cotton, William “The Use of a Design Methods Matrix to Improve Interdisciplinary Communication” The Institution of Electrical Engineers - Computing and Control Division Concurrent engineering -Getting it right first time! Poster session at Savoy Place, 8th June 1995.

Sherwin, Garry., Newlands, David J. and Cotton, William “The Use of a Design Methods Matrix to Improve Interdisciplinary Communication” 2nd National Conference on Product Design Education, Coventry University, 10-11th July 1995, section two paper four.

Newlands, David. and Southey, Phil. “Supply Chain Management: Towards and Integrated Approach” 12th Irish Manufacturing Committee Conference, Cork, Ireland, September 6-8, 1995, pp 373-380.

Newlands, David. and Southey, Phil. “Business Resource Development: Towards and Integrated Approach” 12th Systems Science Conference, Wroclaw, Poland September 12-15, 1995, pp 440-444.

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Newlands, David. and Steeple, Derek. Logistics and Supply Chain Development: Part Three - A Quantitative Simulation of Logistics Opportunities, Control, The Institute of Operations Management, July 2000, pp21-23.

## Appendix 1: Definition and Examples of Keiretsu.

### A1.1 Japan's Corporate Groups - The Keiretsu

There is no concise translation for the Japanese term keiretsu. The word does not change from the singular to plural. Synonyms in English include corporation, group, alliance, association, cartel, portfolio and cluster. Six principal keiretsu predominate in Japanese industry. They are: Mitsubishi, Fuyo, Sanwa, Sumitomo, DKB. The six keiretsu groups of enterprises are outlined in the diagrams in this appendix.

Each group consists of a city bank and a *shosha* - a trading company. Keiretsu ensure they have representative companies in each major commercial sector, aggressively competing against similar members of other keiretsu in the domestic market. Keiretsu industry activities include: automotive supply and manufacture, concrete, construction, paper, plastic, fabrics, ferrous and non-ferrous metals, glass, electronics, ship and train building. Finance companies within the group provide services including a central/city bank, life and non-life insurance, logistics and trading companies. It is estimated that the extent of this affiliation practice covers the bulk of Japanese businesses, such that seven top keiretsu have associations with more than 85% of all stock market registered companies. (Miyashita and Russell, 1994).

Keiretsu tend to own controlling interests in companies at many layers down from the leading part of their organisations. It is understood in Japanese society that once one has purchased a brand of vehicle, seldom will that person change brand.

Once a company has placed emphasis on business with one keiretsu more than the others, a psychological commitment develops. This compulsion is based on extending favourable terms and conditions. To benefit from secured long-term contracts, companies develop closer ties through 'co-operative' business decisions and integrated processes.

It is understood that placing equal emphasis on loans from all financial sources allows a certain quality of 'independence' from absorption into any one group. Once one works for a company, it is expected that the person will work there throughout their career, with perhaps the opportunity to move within the keiretsu to another group company. It is taken for granted that once special deals have been created to supply equipment to a supply company, that company will generally arrange financial loans to make the purchase through the group's loan houses, and provide insurance in the same way. In return, the keiretsu request the supply company to provide opportunities for Auditing Executives to sit on the board of directors. Accepting the tacit contract, the lead bank may open accounts for all employees of the company and encourage them to make use of them. Bonuses are directed to those accounts, and employees are encouraged to leave their money there to build interest.

Employees' mortgages may well be arranged by the company offices with which they work, thus encouraging them to stay with the company throughout the duration of the repayment. Given the economic situation in 1998 and 1999, these types of inducements are likely to be directed to employees with highest intrinsic value. The 'job for life' policies enjoyed by employees from the 1950s are less frequently issued.

## **A1.2 Keiretsu Historical Routes: The Zaibatsu**

Keiretsu formed in the 1940s and 50s from remnants of zaibatsu structures that dominated business. The zaibatsu grew from embryonic forms in the 1850s. American and European shipping maintaining the opium trade with China created an atmosphere of dominance that Japanese culture found threatening. Responding urgently, Japan assumed a national strategy of protectionism against the threat of foreign invasion. The core of Japan's strategy was to be able to project its political will overseas by the creation of a naval presence around its shores. Progressively, government contracts were offered to entrepreneurs willing to act as troop carriers for their Taiwan invasion campaign.

Increasingly profitable, steam ship routes were opened to cross the Pacific. Operating at lower cost than their Western counterparts, the Japanese became sole carriers by the 1860s. Japanese industrial concerns developed through investments in mining, lumber, refining and other heavy industries. Trading and investment companies were created in most Western companies, co-ordinating businesses abroad. Early in this programme, finance was difficult to obtain through government sources, hence the majority of these conglomerates were financed, owned and controlled by families stemming from traditional ruling classes. For entrepreneurs, rags to riches were possible in relatively few years. It became necessary to create the role of professional manager to administer these diverse businesses on behalf of the owners.

World War One created favourable conditions for Japanese industry. Not directly participating in conflicts, its businesses supplied munitions and other goods to both Imperial Germany and the Allies, at considerable profits. Some of the larger conglomerates forecast the end of hostilities and diverged into other fields. Smaller companies, including Suzuki, were eager to enter the supply vacuum. They invested heavily, to be then court-out and go into liquidation. Thus, remaining conglomerates and businesses, having fewer domestic competitors, enjoyed healthy profits in the domestic market.

In the late 1920s and early 1930s, Japan embarked on its ambitions for massive military build-up. Being perceived as non-patriotic on the ruling zaibatsu families created psychological pressures to comply. Desiring not to lose face and business opportunities, zaibatsu owners conformed to changing domestic conditions by implementing armament supply contracts. This programme led to Japan's projection of force and consequent 'Pacific War' during World War Two.

## **A1.3 Keiretsu Formation**

Following suspension of hostilities, allied forces occupied Japan from 1947 to 1952. Overseen by General MacArthur and his team as Supreme Commander for the Allied Powers (SCAP), plans were created and laws changed to eliminate zaibatsu structures. Conglomerates and holding companies were made illegal. Power was compulsorily removed from zaibatsu family members. To eliminate existing management structures, SCAP demanded that *all serving company directors* be removed. The "post-war Prime Minister, Mr Shigeru Yoshida and his colleagues intentionally misinterpreted the order to mean all "managing directors," thus eliminating only a small fraction of zaibatsu

## Appendix 1: Definition and Examples of Keiretsu

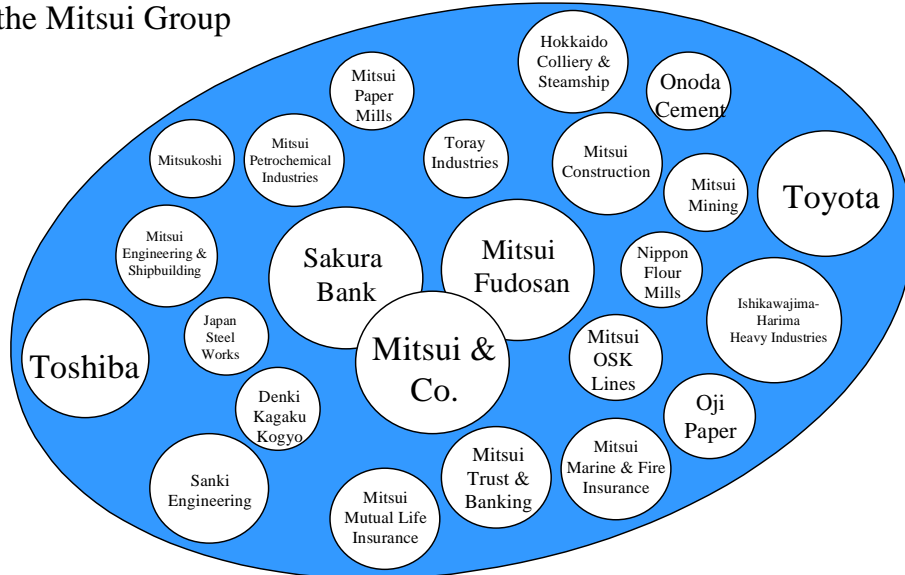
executives, leaving the real managerial talent that had made them so strong still intact.” Miyashita and Russell, (1994, 33).

Removal of zaibatsu owner's influence and elimination of holding companies was designed to create free market dynamics and enterprise in a similar mode to the American and European model. Companies, which were expected to 'go it alone', were generally reluctant to do so. Businesses did not separate as SCAP had anticipated. Instead they remained in loose federation; held together by their historical ties and the memory of good trading relationships enjoyed throughout their development till that time. Freed from owner interference and stimulated by the drive for recovery and expectation of future competition, the new class of professional manager derived affiliation and investment capital from city banks and other businesses in their loose federation as a keiretsu. Thus by circumventing the SCAP law, they effectively negated the need for 'holding companies' under the old zaibatsu system.

MacArthur's administration introduced wireless set manufacture to the Japanese islands. This fledgling industry grew by coercion and internal competition supported by keiretsu funding into world class companies. With the removal of family owner interference and subsequent withdrawal of the allied forces in 1952, keiretsu banks and member company directors could manipulate their economic environment. This was achieved through the strong influence of the political system through corporate campaign funding and support for electoral candidates. Government established agencies including the Ministry of International Trade and Industry (MITI) continue advise strategies to keiretsu members. Initially, MITI had significant influence, however currently the companies decisions are more influenced by forecasts of their competitors actions than the central co-ordinated plan.

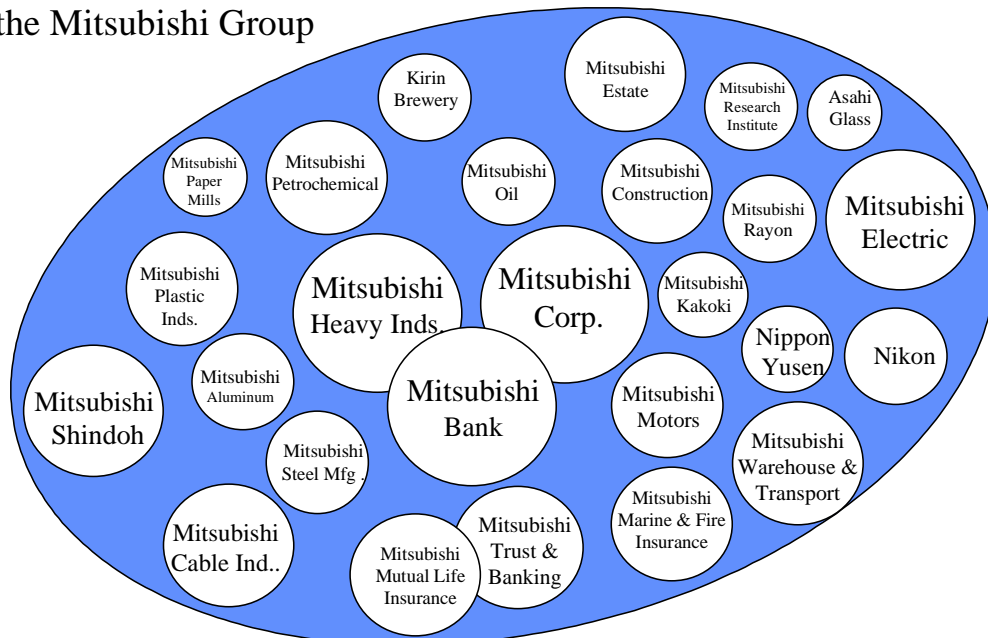
#### A1.4 Keiretsu structures for Mitsui, Mitsubishi, Sumitomo, Fuji, Sanwa and DKB banking groups.

Main Members of the Mitsui Group



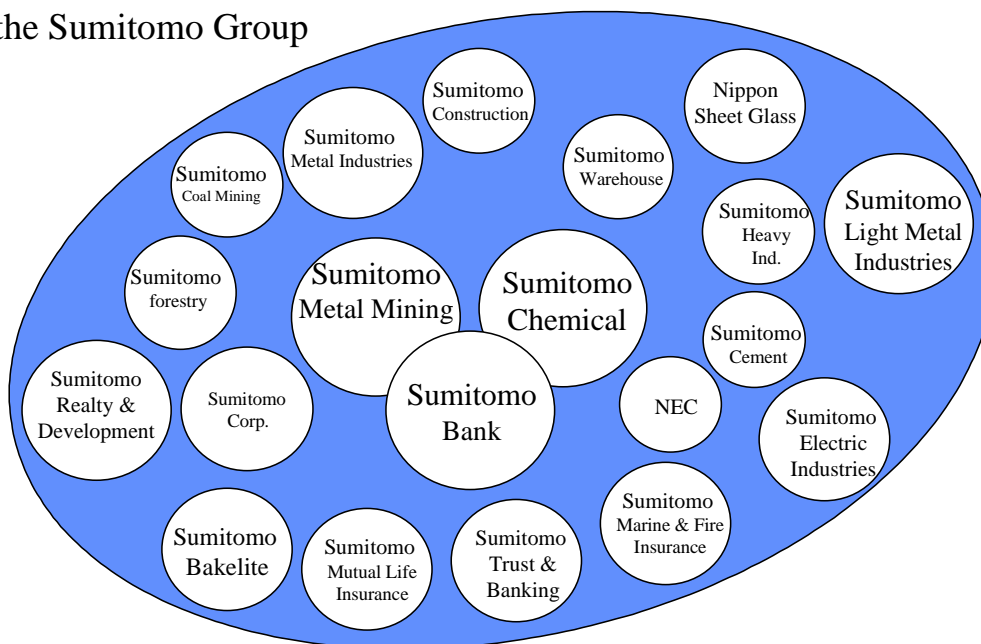
Source: Miyashita and Russell, (1994).

Main Members of the Mitsubishi Group



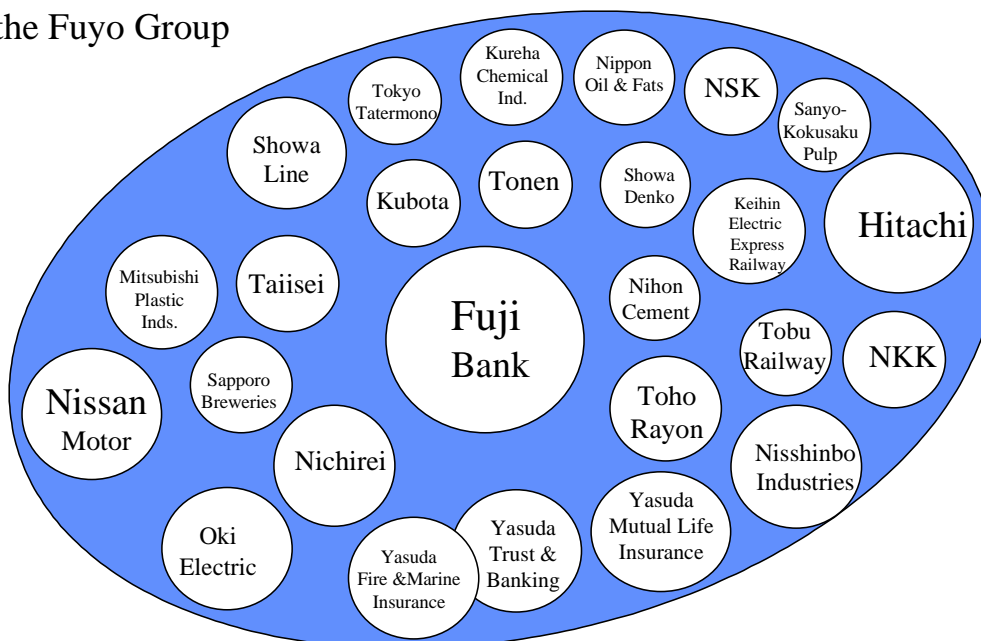
Source: Miyashita and Russell, (1994).

### Main Members of the Sumitomo Group



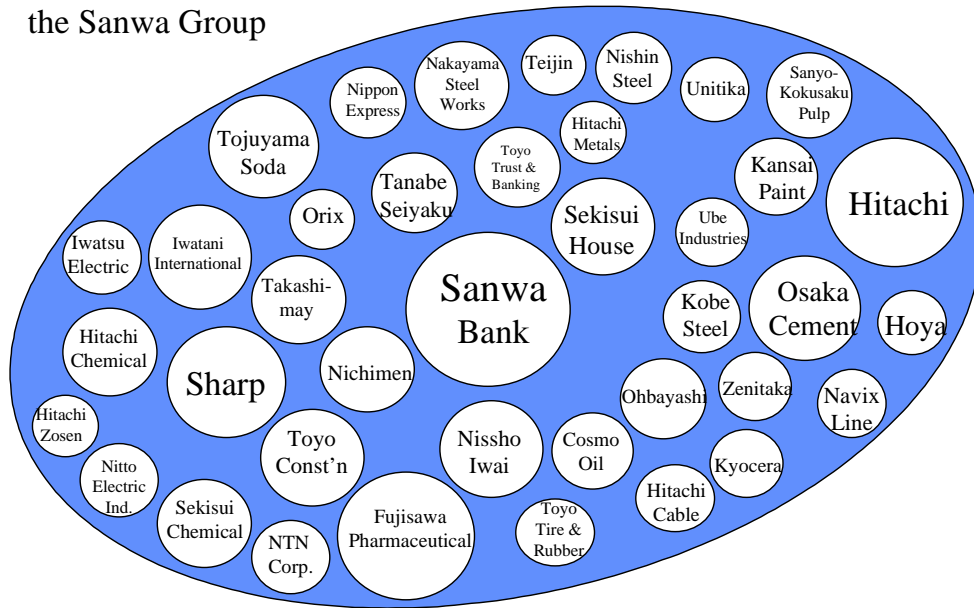
Source: Miyashita and Russell, (1994).

### Main Members of the Fuyo Group



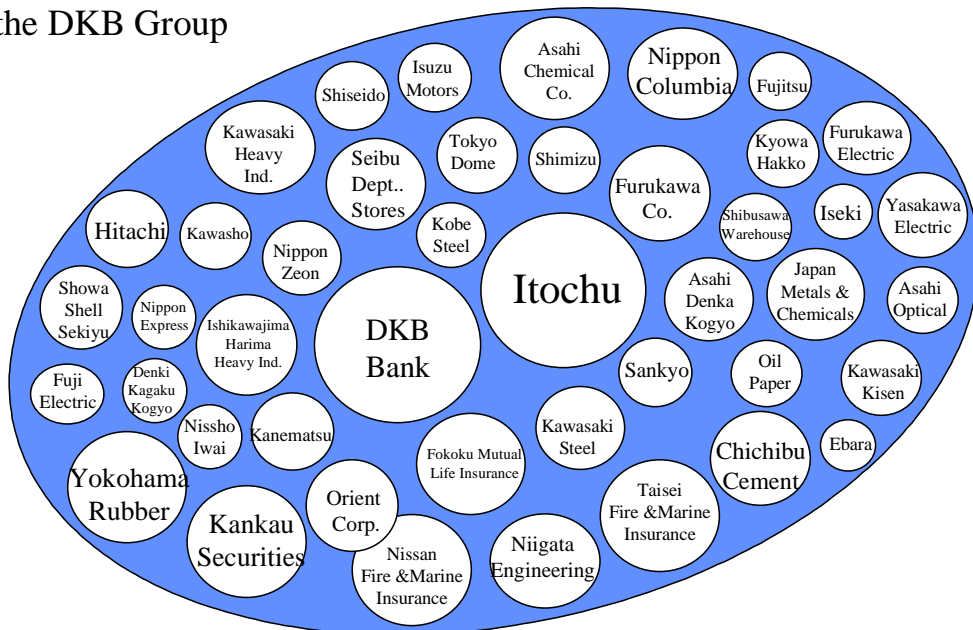
Source: Miyashita and Russell, (1994).

### Main Members of the Sanwa Group



Source: Miyashita and Russell, (1994).

### Main Members of the DKB Group



DKB - 'Dai-ichi Kangyo Ginko' = First National Bank

Source: Miyashita and Russell, (1994).

The keiretsu depicted above are a horizontally linked to their funding bank and to each other. Hines (1994) shows that each board member company has a vertical tree of koryoko kai associated suppliers that form supplier associations. These again own a limited percentage of share equity in each of the other businesses in their supply chain.



## Internal Survey of the Collaborating Company

“we must change who we are, as well as what we do.”

Pascale and Athos (1981)

### A2.1 Introduction

This chapter summarises investigative activities to examine internal supply chains within M E Ltd.<sup>1</sup> The chapter describes a fact-finding survey and interview based field research work undertaken with the first collaborating establishment.

Members of M E's middle management were concerned with a lack of employee and general development policies within the organisation. The project initially was designed to establish a case in favour of introducing an appraisal scheme conducted internally by company staff and supplier audits by M E Ltd's customer representatives. The objectives of the qualitative survey were to identify and examine the culture represented by the relationships prevalent within the company [1 and 2], and employee attitudes towards appraisal and customer conducted audits, considering whether these form a situation favourable for the introduction of formal appraisal systems.

Methods of investigation included a literature search and exploratory interviews with key members of the organisation. A questionnaire was designed, piloted and issued to all members of staff and shop-floor employees. Subsequent investigations introduced the ideas that appraisal per se is not necessarily of benefit to an organisation or its employees, and that appraisal should be used as the basis of current state analysis, identifying goals and corrective action planning. The chapter concludes that the organisation should take measures to improve communication channels and to introduce a more participative management style [3, 4]. However, the organisation was not yet ready for a formal across-the-board system of appraisal.

## A2.2 Terms of Reference

M E Ltd's customers audited the company in the past, and on a three year cycle repeatedly will continue to do so. This work was initiated eighteen months after the first supplier audit conducted by an automotive assembler based in the UK. To ensure improved results from these external appraisals, M E Ltd were required to provide adequate provision for training and support of its shop-floor workforce.

The aim of this investigative survey based phase focused on examining the feasibility of introducing appraisal schemes for staff and shop-floor employee development, and process auditing for company development. Two sets of objectives were identified. Principal objectives the company wished to address were:

- To investigate the existing culture based on the relationships within the organisation.
- To examine the effect of the company's culture on any proposed appraisal or audit scheme.
- To examine the attitudes of management, staff, and shop-floor employees towards appraisal and audit schemes.
- To consider the implications of various types of reviewing procedures.
- To consider to what extent appraisal schemes for shop floor employees and for staff should be similar or should differ.
- To make recommendations to senior management on the feasibility of appraisal schemes.

This research phase identified, determined the scope and analysed relationships and employee attitudes prevalent within M E Ltd. The work considered whether and how to change these into forms favourable for the introduction of customer company's formal supplier audit, appraisal and development schemes. This research project established a process consultative relationship facilitated by M E Ltd's personnel and administration manager as primary contact person. Principal objectives this research addressed:

- To establish the academic rigour required for a low cost survey of M E Ltd employee reactions to the concept of introducing an appraisal scheme.

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<sup>1</sup> For reasons of confidentiality, the name of the collaborating establishment has been disguised as "M E Ltd" and names of employees have been withheld with the exception of Alison Davis, at that time the Personnel and Administration Manager.

- To examine the internal dynamics of a rapidly expanding small to medium sized enterprise and the effects of pressure to improve quality and production process efficiency stemming from the company's assembler customers.
- To identify inhibitors, barriers and likely Targets for change. Having identified these, to recommend and plan implementations to enhance the rating given the company by its customers' supplier appraisal schemes.

This chapter addresses the first of these objectives. Objectives 2 and 3 are dealt with in chapter 5 of this thesis.

### **A2.2.1 Inhibiting constraints upon the work**

Senior members of the organisation allowed the majority of the research to be conducted without manoeuvring or inhibiting the work. There was no reported evidence of resistance from supervisors or shop floor employees once the scope and objectives of the work had been clarified. Access to company documentation was granted, with the proviso that copies were not made or removed and that confidentiality and anonymity is maintained. The only case of restraint was in the questionnaire design, where senior management rejected direct questions relating to their management style.

### **A2.3 M E Ltd.**

M E Ltd is a manufacturer of hand-finished aesthetic wooden trim to the automotive industry. At the time this research was initiated in 1993, the organisation had 245 employees, of whom 222 are shop floor personnel and 23 were staff and management. The company previously reduced workforce numbers as a result of its principal UK assembler customer switching to a lower priced competitor in 1991. The competitor's pricing structure significantly undercut M E Ltd and produced a negative profit for both the competitor and M E Ltd. The competitor requested a price rise from the customer whose policy was to accept no price rises. As a result, the assembler re-established the contract with M E Ltd. This required the company to re-establish production volumes by recruiting replacement shop floor workers.

## Appendix 2: Internal Survey of the Collaborating Company

In 1994, a German corporation that had five plants operating in the same industrial niche segment acquired the company and changed the name to M E Ltd. Two senior executives were introduced to the company on two-year secondments from the corporate parent. Direct competition for orders between the plants was maintained. Apprehension and mistrust of the new German parent company and its personnel was alleviated by conducting the employee survey described in this chapter and introducing voluntary attendance taught German language courses. These were available to all company employees in after-hours sessions.

M E Ltd had been awarded two major new contracts that were necessitating significant and rapid expansion. The size of the organisation, in terms of employee numbers, increased to 325 by April 1994. Employee numbers were expected to increase by a further 50% by the summer of 1995, though the reverse happened - the number fell to approximately 275 due to significantly lower than forecast sales volumes for the company's German assembler customer. This assembler made the strategic decision to make the trim standard option instead of a premium extra. This prompted the assembler to dramatically reduce the price paid per trim sets, while total number of set produced did not increase, which consequently reducing M E Ltd's gross margin.

### **A2.4 Preliminary Internal Interview Data Collection**

Points in this section summarise data collected as part of the interviews conducted with staff on site at M E Ltd.

The opportunity to conduct this investigative research phase stemmed from middle management concern relating to a lack of employee development or relations strategies at M E Ltd. The comparatively low priority personnel issues played in the company and absence of any kind of formal appraisal scheme in place at any time in the company's history accentuated the concern.

M E Ltd middle management deemed it important for the organisation to improve and develop based on internal and external issues:

### **A2.4.1 External Issues**

#### **A2.4.1.1 Domestic Factors**

M E Ltd faced increasing competition from its main UK competitor for real-wood products. In an attempt to cut costs due to economic conditions, some of the company's customers were considering alternate processes which produced trim from synthetic material. New technology solutions were enabling competitors to offer such imitations of an ever-improving quality, at an ever-decreasing price, thus posing a greater threat to the company's existing business. M E Ltd concluded that they needed to become more flexible and to achieve a competitive edge through the company's employees.

#### **A2.4.1.2 International Factors**

Participation in the European Union provided legitimate and viable opportunities for the company's competitors. In response, middle management concluded M E Ltd needed to improve its flexibility by taking advantage of significant opportunities open to organisations that can run more effectively.

### **A2.4.2 Internal Issues**

#### **A2.4.2.3 Customer Expectations**

M E Ltd had focused on winning contracts based on using real wood rather than alternative synthetic materials and quality associated with hand finishing aesthetic components. Consequently, unit price was considered secondary, based on the premium image and marginal extra price charged to end purchasers. M E Ltd began to recognise that the major automotive assemblers were constantly setting standards. This was associated with a perceived inevitability that change would

be forced on the company. The assemblers required M E Ltd to meet best in class benchmarks in a number of performance categories, including human resource management. Assembler customers' expectations to reduce costs over time also increased.

As part of the action research, M E Ltd management were made aware of the fad like treatment measurement and change initiatives were regarded. Opportunity costs for quality, efficiency and delivery reliability were subsequently quantified as a result of benchmarking between the German parent and the UK operations. Benchmarking was initiated in an effort to learn, adopt and adapt, on the proviso that they should regard it as the starting point of a series of projects, rather than a 'flavour of the month' business improvement programme.

Management anticipated that by continuing to increase flexibility and productivity, it would maintain its profitability. Non-quantifiable aspects of better practice were also identified. It was concluded that improving communication and relations with employees would facilitate the organisation to achieve the externally imposed performance targets.

### **A2.4.2.4 Expansion Programme**

Details of a five-year Business Plan requested by M E Ltd's bankers remained confidential to the company Directors. There was a certain lack of trust from the directors, even to the senior management team and therefore a 'need to know' policy operated. The majority of staff and shop-floor personnel therefore would be unable to explain the organisations' stated goals.

Between January 1994 and August 1995, personnel numbers were planned to double. Higher numbers of employees necessitated more systematic induction, training, and appraisal systems to co-ordinate training and development. It was anticipated that employee development would reduce the company's considerable labour-turnover and avoid incurring additional and unnecessary costs of hiring and training personnel. This was strategically important to the company due to a

disproportionately high percentage of new recruits that were settling in and would serve to minimise turnover during the induction crisis.

Until the recruitment drive, potential shop floor employees were informed of vacancies on a word of mouth basis in the local area. M E Ltd did not have a budget for recruitment advertising. During the rapid recruitment phase, the local Employment Office' staff were trained to hold recruitment sessions on behalf of M E Ltd. This was the pilot project to assist in preconditioning the administrative manager to accept responsibility and delegate authority to trained people.

### **A2.4.2.5 Individual Factors**

The company recognised it had not offered structured career advancement, formal training or provided educational opportunities for its employees. Management were not aware of either Herzberg's hygiene and motivational factors [5] or the level of morale in M E Ltd's plants. A number of comments had been made that employees often did not know what was expected of them, and that dissatisfaction was felt due to a lack of feedback from supervisors.

### **A2.4.2.6 Productivity Bonus Scheme At M E Limited**

Each batch of new employees had consistently been opposed to the bonus scheme operated by the company. Several long-service employees had negatively referred to the company productivity bonus scheme. This bonus has the advantage that there is an obvious direct link between overall productivity and pay. The disadvantage is that the amount of bonus paid to individuals relates to hours worked during the week, rather than to performance.

Bonus was calculated and paid weekly. Bonus figures were established and employees paid the value of the bonus multiplied by the number of hours they have worked during the week

Bonus A - for employees with 1 month to 2 years service

$$\frac{\text{Net value of parts delivered to customers}}{\text{Total number of hours worked}} \quad X \quad 5.8 \%$$

Bonus B - for employees with over 2 years service

$$\frac{\text{Net value of parts delivered to customers}}{\text{Total number of hours worked}} \quad X \quad 6.8 \%$$

The bonus officially was not guaranteed, though in practice it was paid weekly. Holiday pay did not include bonus, since the company shut down and therefore quantity of parts delivered was zero. To gauge the extent of the applicability of the comments and lack of communication, it was concluded that an internal survey of all UK employees would be undertaken.

### **A2.5 Methodology**

A literature search was undertaken on questionnaire design, data collection and analysis methodologies. Dillman [6] provided a framework to test results by triangulation and double negatives. The survey instrument was influenced by the earlier Dillman work, and is supported by the tailored design approach [7]. Schuman and Presser [8] examine the form of questions, wording and content relevancy. Schuman [9] recognised strengths and weaknesses exist due to the blend of the natural and the sophisticate. Mishler [10] attempts to avoid circularity or leading questions while focusing on clear meaning, subtitles, and discusses analysis of speech events. Bryman [11] suggested the use of a corporate sponsor to champion the investigation. Howard and Peters [12] identified that qualitative research is accepted unquestioningly in some research fields such as history and literature. They highlight that management research purists claim such activities are not research unless the impact is measured. This impacts on the research instrument design by requiring interpretation of the degree of compliance to a given description and an associated quantitative scale [13]. Kirk and Miller [14] suggested a form of grounded theory to compare and contrast subjects' qualitative responses.



## Appendix 2: Internal Survey of the Collaborating Company

Discussions were held with shop-floor supervisors and members of staff. Language used in interviews and documentation was chosen in line with principles espoused by Walther [15]. The information gathered provided sufficient data to design a draft questionnaire relevant both to theory on appraisal schemes [16, 17, 18 19, 20, 21] and individually tailored to the climate at M E Ltd.

The questionnaire was designed to be simple to understand, and to take not more than approximately 5 minutes to complete. This was done to minimise resistance, due to fear [22], from Team Leaders, who likely would not want their workforce to spend time away from their primary task, and to lessen any perceived threat employees felt, in order to encourage the maximum number of responses.

Senior management were presented with a draft questionnaire and were invited to discuss the merits of all questions. This resulted the questionnaire becoming more focused; a number of questions were modified and in some cases a wider range of optional responses were added. The scope of the questionnaire was restricted, due to senior management's apprehension regarding a number of direct questions. These questions related to attitudes to senior management, including "How well do you feel senior management perform their duties?" and "Are you proud of the company?".

Twenty-three forced answer questions were prepared, complemented with a request for open-ended qualitative feedback. Two versions were produced, one for management, one for shop floor employees. The questions initially identified the category of employee represented by time of service.

A pilot questionnaire was issued to team leaders. Two potential flaws became apparent:

- 1) Some shop-floor employees may not understand all questions.
- 2) The truthfulness of responses may be inhibited by employees' fear of individuals' answers being recorded and presented to senior management.

As a result a number of questions were simplified by rephrasing. The title page was amended to include additional emphasis on the confidentiality and anonymity of all questionnaire results.

## Appendix 2: Internal Survey of the Collaborating Company

The final questionnaire versions were issued to all shop-floor employees, staff and management, excluding non-executive Directors that only sat on the board and were not involved in day to day company management activities. Team leaders issued copies of the questionnaire to shop floor employees, explaining briefly the purpose of the investigation. Staff and management individually were given questionnaires. Each questionnaire was distributed with a plain envelope to reinforce anonymity of all responses.

Results of the analysis were distributed at the same time to both senior management and to shop floor employees.

The Office Manager presented the results and conclusions to senior management and team leaders.

The team leaders then were encouraged to provide detailed feedback to shop floor employees.

Response rates were high. Table 5.1 illustrates percentages of shop floor and staff response. This indicates that the data provides a valid representation of the attitudes of the workforce as a whole.

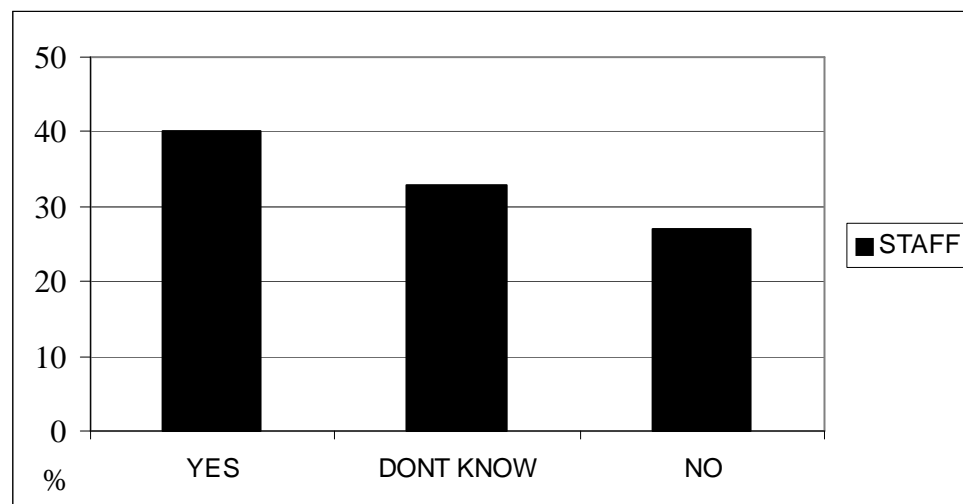
**Table A2.1 M E Ltd Company Specific Survey Response**

Total Number of employees		Total respondents	% Response
Shop-floor	162	128	79
Staff/Management	20	15	75

## A2.6 Questionnaire Results

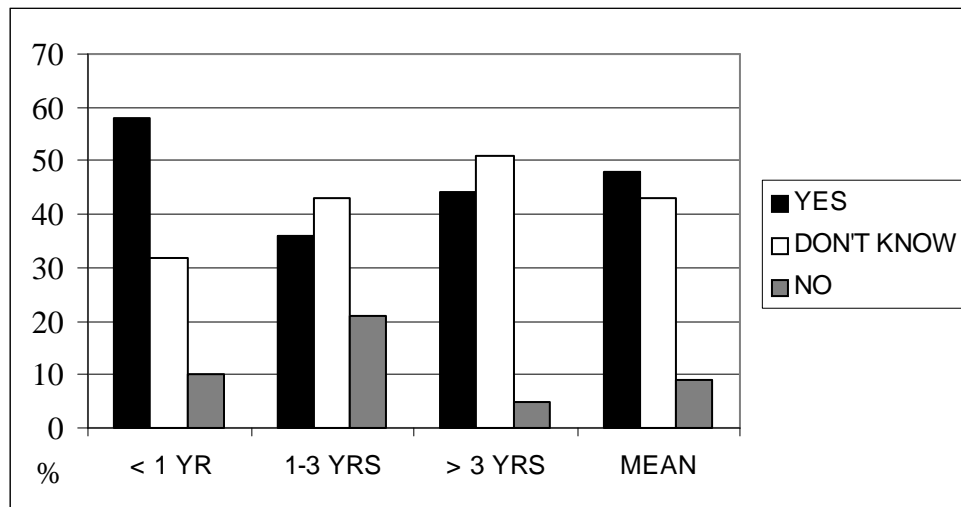
The following is a summary, released for use in this thesis by M E Ltd, of the results from the employee questionnaire.

Less than half of shop-floor employees and staff indicated a positive intention to stay with the company for the subsequent two years or longer. Figures 5.1 and 5.2 illustrate the breakdown of results. More than a quarter of staff stated they would definitely like to leave the company during the stated period. This is partially explained by distrust of the seconded managers from the German parent company and the grouping of all administrative staff with management.

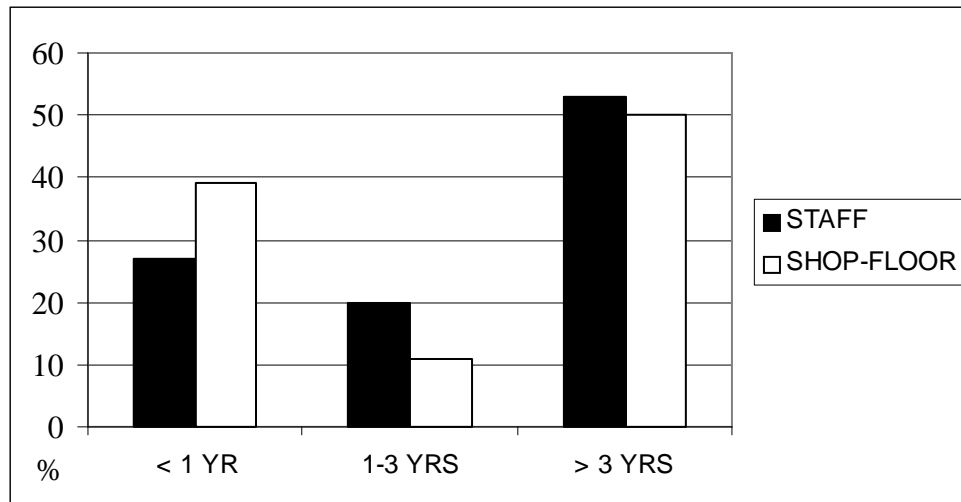


**Figure A2.1. Percentage of staff that planned to stay with the company for two years or more.**

Nearly half the staff thought that employees stayed at the company due to the restricting job market. A third of staff believed that employees left due to low job satisfaction, though only a negligible number of shop-floor employees indicated this. The most popular reason shop-floor employees indicated for staying with the company was its convenient location. Both groups suggested most employees generally left due to rates of pay. However it should be noted that individuals' motives should be taken into consideration here. Staff concluded it likely that shop floor employees believed by indicating that response they improved their chance of leveraging a pay rise.



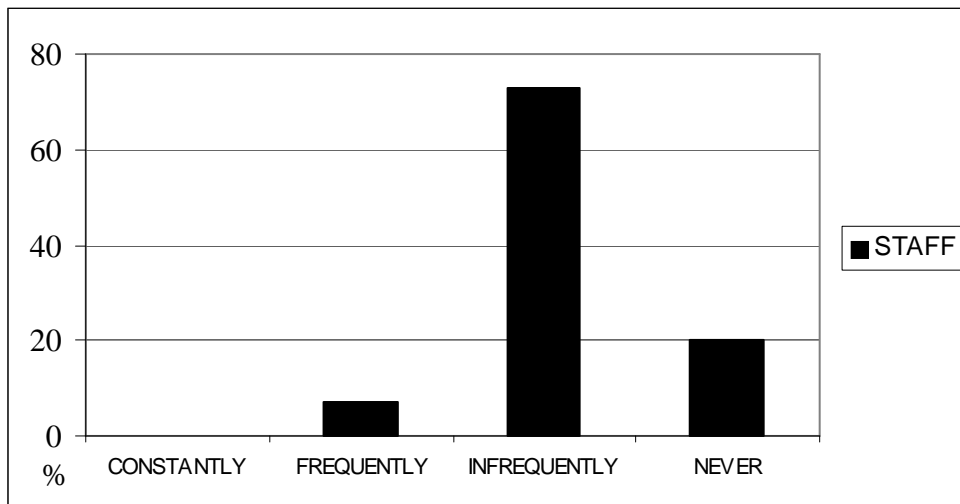
**Figure A2.2 Percentage of shop floor employees planning to stay with the company for two years or more, categorised by length of service.**



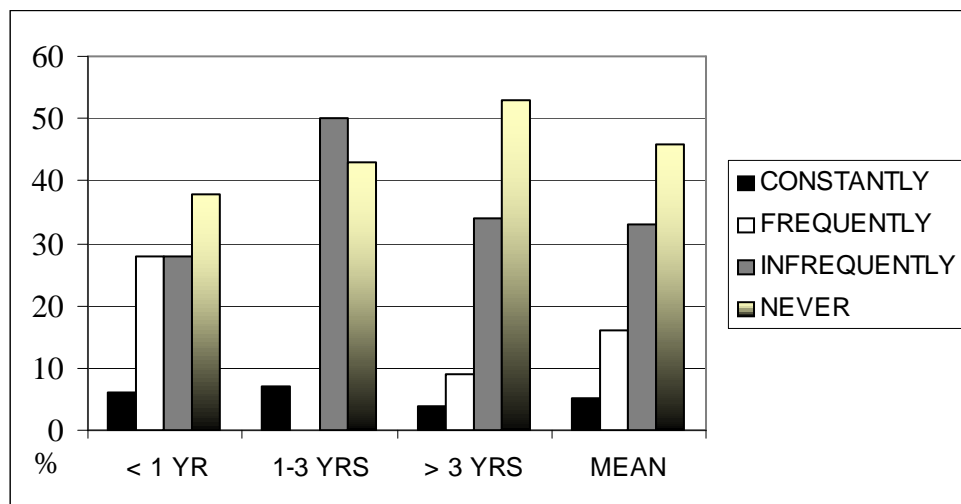
**Figure A2.3 Length of Service**

### A2.6.1 Working Environment

A majority of shop floor and staff personnel claimed to be proud of the company's products while consider their working environment to be friendly. Approximately half the employees agreed their working environment is comfortable. There is a significant variation in responses between staff and shop floor on the question of how often they feel valued.



**Figure A2.4. Do staff feel valued?**



**Figure A2.5 Do shop floor employees feel valued? Categorised by length of service.**

Shop-floor employees and staff tend to feel valued infrequently. There is significantly more variation among shop-floor responses than among those from staff. These results were cause for concern, based on Mayo's Hawthorne experiments and Maslow's hierarchy it is recognised that employees who feel valued will generally contribute more to the success of their organisation. Only 7% of staff and 21% of shop-floor employees felt valued at least on a frequent basis.

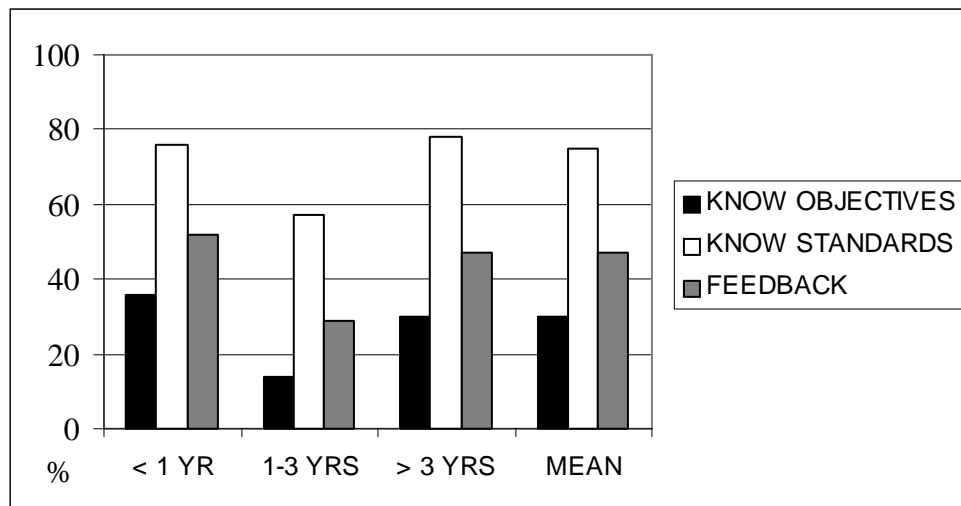
A majority of shop-floor employees felt that they contributed more to the success of the company than any other group within the organisation. Forty percent of staff also gave this response.

Approximately one third of each category of employees indicated that everyone contributed equally.

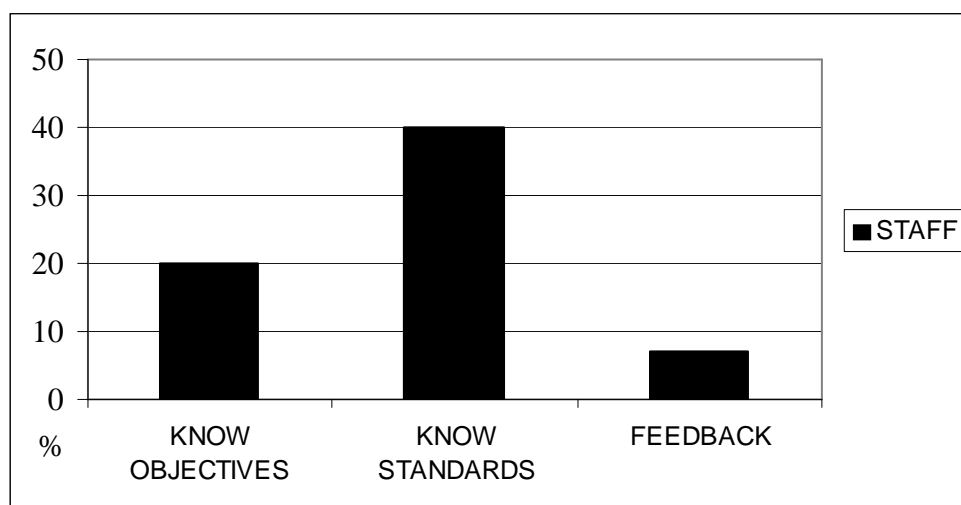
No one stated that top management contributed the most.

### A2.6.2 Communication

Results indicate that the majority of shop-floor employees knew what standards of performance were expected from them. Marginally less than half obtained feedback on whether their own performance met the required standards and less than a third claimed to know what the company's overall objectives were.



**Figure A2.6. Shop floor knowledge of company objectives, standards, and feedback. Split by length of service.**



**Figure A2.7 Staff knowledge of company objectives, standards and feedback.**

Less than half of staff knew what standards of performance were expected from them. Only a fifth understood the company's objectives, and only one of the 15 members of staff who responded claimed to receive feedback on their performance against required standards.

### **A2.6.3 Management Style**

Nearly one third of staff and shop-floor employees claimed to want more responsibility from their supervisors, implying a lack of delegation. Over half of staff and approximately a third of shop-floor employees felt they received inadequate guidance to accomplish higher performance in their position. Consequently, middle managers were introduced to the principles of one-minute management [23].

The significant majority of all employees were not specifically encouraged to make improvement suggestions; only 12 % of shop-floor employees had seen any of their suggestions adopted. In contrast staff were more likely to make suggestions without the encouragement from management.

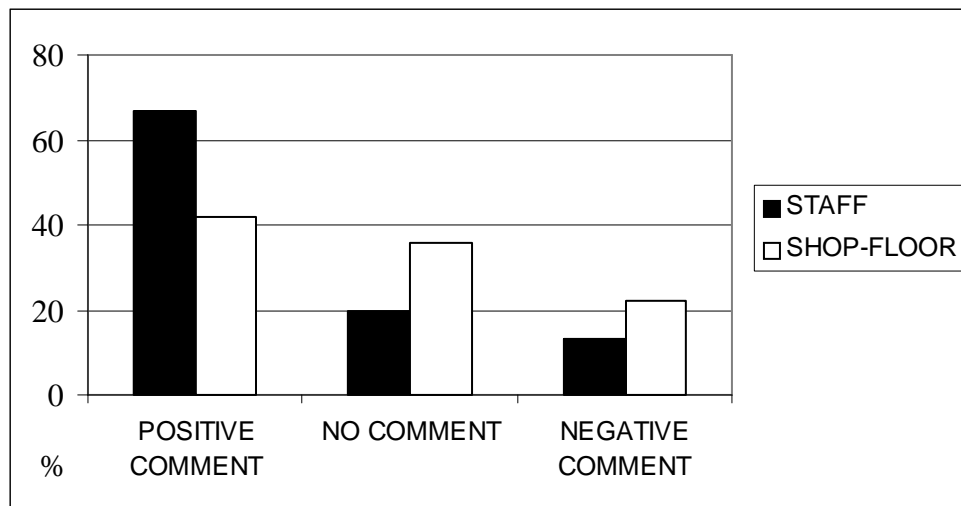
Half of shop-floor employees, and less than a half of staff, were encouraged to discuss problems related to their work with their supervisors. Senior management were not considered to be particularly approachable in the case of personal problems.

Less than a third of both staff and shop floor employees claimed to be happier at work than 6 months previously. Most staff and shop-floor personnel claimed to have received no training, or gained any new skills at work during the previous 6 months.

### **A2.6.4 Employee attitudes toward appraisal schemes**

More than half the staff commented positively about appraisal schemes and indicated that they thought their supervisor would let them set their own targets. Results from shop-floor employees

were less enthusiastic, one third thought they would be allowed to set their own targets, while fewer than half answered favourably toward the idea of introducing an appraisal scheme. This low response is partially attributed to a lack of knowledge about appraisal schemes. It was concluded that nearly a fifth assumed a link between appraisal and pay, which had not been prompted by the questionnaire.



**Figure A2.8 Employee attitudes expressed toward appraisal schemes.**

### A2.7 Detailed Comments On Appraisal

An analysis of the contents of comments in detail revealed a variety of valid concerns and perceived benefits. Topics included: communication; benefits of objective-setting, benefits of feedback; morale; equity; trust/distrust between employees and management; respect for/from senior management; fear of unknown systems being imposed; implications on team work; practical concerns of the feasibility of appraisal at the company. Examples of typical comments are given below. Further representative comments are presented in Appendix 1.



#### **A2.7.1 Objectives**

*"This would give us something to aim for. At the moment we get no praise and never know if the top management are grateful or not."*

#### **A2.7.2 Improvement Through Feedback**

*"It would make the standard of work better and you would know for yourself if you need to improve or change anything. I think it would be a good idea."*

#### **A2.7.3 Morale**

*"You would feel better in yourself if someone says well done now and then"*

#### **A2.7.4 Attitude To Management/Respect**

*"I'd feel it was just another way of them hiding from their responsibilities by pushing more work to us for no thanks or reward"*

#### **A2.7.5 Mistrust Of Management**

*"It's a very good idea. Shop-floor workers are NOT respected and are treated disgustingly"*

*"It would be OK if it is done for the right reasons not just to find more ways to kick employees in the teeth again"*

*"It would not be so bad if you were paid for what you are worth, but there is no chance of that! They (senior management) do not care about us. The only thing the management likes giving is orders, not respect."*

*"Because of management's rather detached 'Them and Us' view, they do not consider the indirect advantages to productivity through increased motivation, company loyalty and lower staff turnover."*

#### **A2.7.6 Fear**

*"Employees would think it was just an excuse to single out people who may struggle with their work"*

#### **A2.7.7 Individual Appraisal As Anti-team work**

*"Appraisal would mean each worker would feel pressured into increasing their output and thus quality in their work would deteriorate. At the moment in the block that I work my supervisor has us working as a team. We help each other to achieve these whilst keeping the quality to a very good standard."*

#### **A2.7.8 Equity**

*"It would be a good idea if people who showed good progress were rewarded for their efforts."*

*"I think it's a good idea as you will get paid for what you do and not carry others on your back"*

*"This would sort out those employees who do not work as hard as they should. It would also stop unneeded overtime during which too little work is done"*

## A2.8 Discussion

Initial impressions from the collated comments were that employees took the questionnaire as an opportunity to criticise low pay levels. Employees seemed particularly sensitive that the most recent pay rise occurred three years prior to the merger. There seemed to be a danger that employees felt put-upon, assuming that appraisal would benefit management and resist its implementation by asking 'what's in it for me?'

Close scrutiny revealed that the majority of employees that had specifically mentioned pay or had suggested a link were not proposing an across-the-board increase. Instead, the emphasis was for *fair* pay to be determined by individuals' productivity. The prevailing sense of wage structure inequity was concluded as a probable primary justification that a considerable proportion of the employees contemplated the link between appraisal and pay. This is in part supported by the system used at that time that rewarded long service as opposed to employees doing the most or best work. Employees knew that performance wasn't being formally measured. The suggestion that performance could be measured conceivably made them think of the advantages in terms of making the pay system more equitable. This is of great relevance to senior management's human resource policies. It suggested pay structures should be reviewed and amended to enable individuals' earnings to reflect their own productivity.

The company could neither afford a company-wide pay rise, nor lose its best workers that happen to be on a low level of pay due of their age and/or short service. A high number of employees indicated that they would welcome appraisals linked to pay, if they could be sure that the process would be conducted fairly. This policy was taken to the inter-company level during negotiations with M E Ltd's customers' purchasing representatives. By bringing the win/win scenarios to its customers, the impression of a dynamic, modern and progressive company was considered to have been produced.

## Appendix 2: Internal Survey of the Collaborating Company

The final comment quoted above highlights an instance of ineffective human resource management. This had implications for company policies used at that time. The company could neither afford neither superfluous nor non-productive (loss-making) overtime. The responses revealed that the objectives of performance measurement were generally misunderstood. This suggested it was important to explain details of the scheme to all employees before it is introduced.

Further responses to the open question about appraisal revealed a lack of trust of top management. Employees feared that appraisal would be used as a way to 'get more work out of us without giving us any more pay'. There was suggested lack of respect for or pride in top management since no employee named senior management as contributing most to the success of the company. It seemed fair that appraisal may be used as a way to 'get more work out of us without giving us any more pay'.

Many of the shortfalls highlighted by the employee comments could be tackled independently of any appraisal or auditing scheme. Management training could assist introducing objective setting, high quality feedback and improve morale, and relations between management and employees. Improved management practices throughout M E Ltd would lay the essential foundations for a possible performance measurement schemes in the future.

An individual or a specified group would have to take responsibility for monitoring performance. Initial audits by customers are conducted under the authority of the customer's requirements. Team leaders perceived themselves as part of the workforce (they actually participate in the shop-floor work) and therefore steered clear of this responsibility. Managers were too busy fire fighting.

It was recommended that a culture and internal relationships be developed within which everyone in the hierarchy felt responsible for performance. Authority in this scenario would be delegated to team leaders. They would then manage their people on a day-to-day basis. Given the recruitment programme at that time, more responsibility had to be delegated to immediate supervisors to monitor and correct problems.

Conclusions from the internal survey were reported. The data caused concern to middle management while virtually being ignored by senior management. This provided the opportunity to initiate changes by a 'middle-up-down' approach rather than 'top down', or 'bottom up'.

### **A2.9 Conclusions**

This investigation into the feasibility revealed complex employee relations' problems. A summary of M E Ltd specific analysis, comparing and contrasting the current state with personnel development literature, was provided to the company's management. Improvements were recommended to be made initially via a pilot project, progressing to more far reaching improvements.

It was recognised that employee performance problems must be rapidly resolved while taking into consideration the objective of facilitating individuals' development. A common cause of long-standing performance problems was that the managers did not accept and deal with their employee performance appraisal responsibilities, nor keep a record of actions taken.

Ms Davis informed M E Ltd senior management that employment law requires companies take timely action to correct any alleged performance deficiencies. A focus was required on actual performance rather than historic records. Prompt identification and corrective action was required.

Joint investigations identified that appraisal per se would not necessarily directly benefit the organisation or its employees, though would provide raw data to analyse training needs. It was considered impractical to recommend that all managers and supervisors at the company need training in all areas of people management at once.

It was identified that success was dependant more on the preparedness and flexibility of managers than on the systems used, and it was advisable to put as much investment in preparing the system users as in the systems. The company was recommended to commit to implement activities to gain

## Appendix 2: Internal Survey of the Collaborating Company

Investors-in-People recognition prior to implementing a performance appraisal scheme or initiating a dyadic customer-supplier development programme.

On the next page is a copy of the original questionnaire, a summary of the collated results and M E Ltd's employee development policy.

CONFIDENTIAL AND ANONYMOUS

To : All Employees

From: Personnel and Administration Department

EMPLOYEE RELATIONS QUESTIONNAIRE

I have designed the following questionnaire as part of a project in association with Coventry University. May I kindly ask you for your assistance, by completing all questions, which should only take approximately 5 minutes.

All answers will be anonymous.

Please read each question carefully and indicate your answer by circling one of the options.

Example: How long have you been employed by M E Ltd ?

Less than 1 year

1 to 3 years

More than 3 years

Key: <b>Percentage of staff</b> / <i>Percentage of shop-floor</i>
---

Your completed questionnaire should be returned to your supervisor.

All individual answers will be anonymous and the results will be made freely available.

Alison Davis  
Office Manager

A) LENGTH OF SERVICE

1) How long have you been employed by M E Ltd?

Less than 1 year

1 to 3 years

More than 3 years

<b>27 / 39</b>	<b>20 / 11</b>	<b>53 / 50</b>
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**B) CONDITIONS OF EMPLOYMENT**

2) Would you like to stay with M E Ltd for the next 2 years or more?

Yes

No

Don't know

<b>40 / 48</b>	<b>27 / 9</b>	<b>33 / 43</b>
----------------	---------------	----------------

3) What do you think is the main reason for employees staying at M E Ltd?

Location  
(Please state)

Type of work

Job satisfaction

Rate of pay

Other

<b>27 / 45</b>	<b>7 / 17</b>	<b>13 / 14</b>	<b>7 / 3</b>	<b>46 / 21</b>
----------------	---------------	----------------	--------------	----------------

4) What do you think is the main reason for employees leaving M E Ltd?

Location  
(Please state)

Type of work

Job satisfaction

Rate of pay

Other

<b>0 / 2</b>	<b>0 / 4</b>	<b>33 / 1</b>	<b>60 / 90</b>	<b>7 / 3</b>
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**C) WORKING ENVIRONMENT**

5) Are you proud of the company's products?

Yes

No

Don't know

<b>93 / 65</b>	<b>7 / 20</b>	<b>0 / 15</b>
----------------	---------------	---------------

6) How often do you feel valued as an employee of the company?

Constantly	Frequently	Infrequently	Never
<b>0 / 5</b>	<b>7 / 16</b>	<b>73 / 33</b>	<b>20 / 46</b>

7) Would you describe your working environment as friendly?

Yes	No	Don't know
<b>73 / 80</b>	<b>27 / 9</b>	<b>0 / 11</b>

8) Would you describe your working environment as comfortable?

Yes	No	Don't know
<b>60 / 47</b>	<b>40 / 45</b>	<b>0 / 8</b>

9) Who do you think contributes the most to the success of M E Ltd?

Shop Floor employees	Team Leaders	Staff	Top Management	Everybody
<b>40 / 65</b>	<b>7 / 6</b>	<b>20 / 1</b>	<b>0 / 0</b>	<b>33 / 28</b>

#### D) COMMUNICATION

10) Do you know what the company's overall objectives are ?

Yes	No	Not sure
<b>20 / 30</b>	<b>53 / 44</b>	<b>27 / 26</b>

11) How do you normally find out about company matters that affect you?

Gossip (Please state)	Memos	Personally from supervisor	Other
<b>73 / 78</b>	<b>13 / 8</b>	<b>13 / 12</b>	<b>0 / 2</b>

12) Do you know what standards of performance are expected from you?

Yes	No	Not sure
<b>40 / 75</b>	<b>53 / 14</b>	<b>7 / 11</b>



- 13) Are you told whether your own performance meets the required standards?

Yes	No	Not sure
<b>7 / 47</b>	<b>93 / 47</b>	<b>0 / 6</b>

E) MANAGEMENT STYLE

- 14) Does your supervisor give you as much responsibility as you would like?

Yes	No	Don't know
<b>53 / 65</b>	<b>33 / 29</b>	<b>14 / 6</b>

- 15) Are you given adequate guidance from your supervisor?

Yes	No	Don't know
<b>27 / 67</b>	<b>53 / 27</b>	<b>20 / 6</b>

- 16) Has your supervisor encouraged you to make any suggestions for improvement in your workplace or working methods during the last 6 months?

Yes	No	Not sure
<b>40 / 22</b>	<b>47 / 63</b>	<b>13 / 15</b>

- 17) Have any of your improvement suggestions been adopted in the last 6 months?

Yes	No	Not sure
<b>67 / 12</b>	<b>27 / 77</b>	<b>6 / 11</b>

- 18) Are you encouraged by your supervisor to openly discuss work related problems?

Yes	No	Not sure
<b>40 / 53</b>	<b>53 / 38</b>	<b>7 / 9</b>

- 19) If you had family problems preventing you from attending work, would you feel able to speak to senior management about this?

Yes	No	Not sure
<b>53 / 27</b>	<b>40 / 65</b>	<b>7 / 8</b>

- 20) Are you happier at work now than you were 6 months ago?

Yes	No	Not sure
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<b>20 / 29</b>	<b>60 / 52</b>	<b>20 / 19</b>
----------------	----------------	----------------

21) Have you received any training at work in the last 6 months?

Yes	No	Not sure
<b>20 / 20</b>	<b>80 / 77</b>	<b>0 / 3</b>

22) Have you gained any new skills at work during the last 6 months?

Yes	No	Not sure
<b>27 / 34</b>	<b>73 / 62</b>	<b>0 / 4</b>

23) Do you think that your supervisor would let you set your own work targets?

Yes	No	Not sure
<b>53 / 31</b>	<b>7 / 41</b>	<b>40 / 28</b>

**F) ATTITUDE TO APPRAISAL**

24) Please describe in your own words what you would think if senior management suggested introducing a Performance Appraisal scheme (Job Progress Reviews)

	Staff	Shop-floor
Positive Comments	<b>67</b>	42
Negative Comments	<b>13</b>	22
No Comment	<b>20</b>	36
Total	<b>100 %</b>	100 %

**Further quotations from the survey**

A representative selection of comments made by employees when asked for their thoughts on the introduction of a performance appraisal scheme by senior management:

"Could the company find time to run such a scheme? I don't think so."

"If it would lead to some sort of pay award then I would be all for it"

"We would have to listen to suggestions to see if it was going to be financially beneficial for shop-floor workers"

"Good idea if it meant performance related pay"

"This would be a good idea to sort out who does really work and who are here just to mess around"

"Allright if the earnings matched work output"

"Some people do twice the work of others and get half the pay"

"They should have a shake-up and sort out of the management first....Give respect to us the employees ... Stop taking and give something back"

"I don't see how it would improve things if a scheme like this was brought in because the company is doing well enough"

"This would be an opportunity to air our views on certain topics"

"At least we would know how we were doing as regards our jobs. At present there is no way of knowing if our work is satisfactory"

"It would be good letting us know our target each week"

"It would be good to let the workers know where they stand"

"I think it would be a very great idea because each employee would be striving not only to do just the job required but put some pride and personal effort into their work."

"As long as it was fair it would be OK"

"It would show who works hard"

"I would be quite concerned ... something as important as performance appraisal would need time and effort from all concerned to be considered a fair reflection. "

"Good idea... better communication between management and shop-floor"

"I think the idea itself is good, but through past experience, I would not be confident of them arriving at the correct assumption"

"Work performance would be poor, employees would rush their work to meet overall demands"

"I would like to see management stand at a bench all day and do the job. Instead of telling us what we are doing when they don't know themselves. After all we haven't had a pay rise"

"We're OK. It's senior management that needs looking at"

"Not a good idea, as individuals don't want appraisal. Most just come to work to do a job, not to be treated as school kids, having their work checked and given gold stars for good work."

"What's the point?"

"At the end of the day you work as a team and not individuals. That's the way the jobs should be done"

"I don't think it would work, because it would lead to more arguments and bad work"

"I think it is a great idea. It should be done without question."

"It would be good because it would sort out the workers from the non-workers"

## Appendix 3. Employee Development Strategy and Policy at M E Ltd

### **EMPLOYEE DEVELOPMENT STRATEGY AND POLICY**

**ALISON DAVIS  
OCTOBER 1994**

**EMPLOYEE DEVELOPMENT STRATEGY AND POLICY AND THE COMPANY LIMITED**

#### **SYNOPSIS**

The following report investigates the current state of employee development at THE COMPANY Ltd. It is written to appeal to the executive within the company who should be expanding on existing employee development strategy and policy.

The following areas will be covered:

- Definition of Employee Development Strategy and Policy
- Outline: Why Employee Development is so important.
- Description of current Strategy and Policies:
  - a/ Strategic Operational Plan
  - b/ Learning Need Prioritization and Concerns
  - c/ Integration of Learning and Working
  - d/ Top management emphasis on continuous development
- Analysis and Conclusions of the Current Position
- Recommendations for Improvements and Concluding Remarks

#### Definition of Employee Development (ED)

ED is much more than 'training'. The latter term suggests short-termism, possibly one-off sessions, designed primarily to meet the requirements of a specific task or job, requiring the acquisition of skills to pre-determined standards. Development encompasses performance management and management development and involves achieving maximum potential not only for the individual but also for the organisation.

Harrison supports the essentiality of ED, by noting that:

"Employee development as part of the organization's overall human resource strategy means the skilful provision and organization of learning experiences in the work place in order that performance can be improved, that work goals can be achieved and....there can be

### Appendix 3. Employee Development Strategy and Policy at M E Ltd

continuous organizational as well as individual growth." (Harrison, R. Employee Development. 1983, p4).

#### Policy and Strategy

Corporate and functional strategies are developed from: company audits, environmental analysis (PEST), identifying gaps and challenges, forecasts, SWOT. Policy establishes the overall purpose and direction at a functional level within organisations. Policy acts as the rudder for the enterprises' strategies.

#### Why should THE COMPANY be concerned with Employee Development?

**EMPLOYEES'** knowledge, skills, experience and profound understanding of the job should be viewed as **THE MOST VALUABLE RESOURCES OF THE ORGANISATION!** Personnel cost money to acquire, to maintain and can be difficult to replace. Like any other resource, they must and therefore should be deployed as effectively as possible towards the achievement of organizational goals.

The key to achieving organizational goals is Employee Development. Through Employee Development the Company can achieve maximum potential from employees, thus reducing the risks inherent in achieving both current objectives, whilst increasing future growth, performance and standards.

THE COMPANY must take account of both external and internal factors in implementing or ignoring the Employee Development theme.

#### External Factors

##### a/ Domestic

We are facing increasing competition from our main UK competitor for real wood products.

Due to economic conditions some of our customers are looking into new processes which produce imitation wood trim in an attempt to cut costs. New technology enables competitors to offer such imitations of an ever-improving quality, at an ever-decreasing price, thus posing a greater threat to THE COMPANY's existing business.

THE COMPANY therefore needs to become more flexible and to achieve a competitive edge through its employees.

### Appendix 3. Employee Development Strategy and Policy at M E Ltd

#### b/ International

The European Union gives the company more competitors, hence an need for improved flexibility, but it also offers significant opportunities to organisations that can run more effectively.

#### Internal Factors

##### a/ Customer Expectations

New standards have been set by our major customers, including Rover, Honda and Audi. THE COMPANY is expected to meet best in class benchmarks in a number of areas, including Resource Management. Friendly benchmarking between Empe and the U.K. operations, in an effort to learn, adopt and adapt, should not just be seen as the 'flavour of the month' business improvement programme. Customers' increasing expectations of us to reduce costs over time will inevitably force change.

Improving communication and relations with employees, will greatly assist our organisation to achieve externally imposed objectives. As a result of increasing flexibility and productivity, THE COMPANY will continue to maintain its profitability.

##### b/ Expansion Programme

Between January 1994 and August 1995, there is a planned 100% increase in personnel numbers. Higher numbers of employees necessitate more systematic measures to co-ordinate training and development. Costs of hiring and retraining personnel are high so we must avert high labour turnover. In particular, with a disproportionately high percentage of new recruits (settling in), employee development will help minimise turnover during the induction crisis!

#### Individual Factors

Employee development can enrich individuals' quality of life in addition to enhancing the effectiveness of their work.

Andrew Mayo noted the importance of realising peoples' potential:

"The waste of precious capability leads to frustration, low morale, high staff turnover, poor performance and results. By contrast, good career management means strongly motivated employees, fully able to meet the changing needs of the organisation! (Managing Careers: Strategies for Organisations.)

### Appendix 3. Employee Development Strategy and Policy at M E Ltd

#### Existing Employee Development Strategy and Policy

##### Is THE COMPANY Strategic?

In popular management texts, which describe organisations and their behaviour, there is a framework leading to strategic plans:

Mission Statement	(generalized objective)
Policies	(purpose and direction)
Strategies	(getting from A to B)
Resources, plans	
Implementation,	

The company has a 5 year Business Plan, which was produced at the request of our bankers. However, details of this business plan remain confidential to the Directors of the company.

There is a certain lack of trust from the directors, even to the senior management team and therefore a 'need to know' policy is operated. The majority of staff and shop-floor personnel would be unable to explain the organisations' stated goals.

##### Do managers give priority to learning needs?

Managers are often unaware of their subordinates' learning requirements. There is no system in place for identifying performance standards or training requirements.

The majority of the managers are mainly concerned with getting the designated job done. They are not encouraged to consider their subordinates learning needs, nor does assessment of their own performance include any element of managing or developing their staff. Only the Office Manager has had any form of human resource training. Therefore, other managers do not appreciate the importance of employee development.

Learning experiences within the workplace are rarely planned. External learning takes place on an ad-hoc basis, dependant upon individual requests.

##### Shop Floor - Training



### Appendix 3. Employee Development Strategy and Policy at M E Ltd

The majority of shop floor personnel are recruited without prior experience. Required skills can be obtained from short term training, although these are specific to this type of industry. As a result, training has to be given to new employees, before they can contribute productively.

In July 1994, a policy was established to give all new recruits at least six hours of intensive training prior to commencing on the shop floor. This was held during non-productive hours, when Team Leaders had the time to teach. Prior to that date, new recruits learnt by the 'sitting next to Nelly' approach. The new scheme proved to be very popular with both new recruits and their team leaders. However since September no prior training has been undertaken due to urgent requirements for additional shop floor personnel. ('We need them to start Monday'). Despite good intentions of the scheme, priority is still given to filling vacancies rather than training people for those vacancies.

Once employees have reached an acceptable standard, they are considered not to require any further training unless there is a potential shortage in another section. In this case, the 'sitting next to Nelly' approach is again used.

#### Integration of learning and work

##### Shop Floor

Most shop floor training is on the job, taking place on-site. The advantage of such training is that its relevance is immediately apparent. This training however, is limited to usually one specialised section or activity. Overall processes are not appreciated due to this over focus on activities, reducing the potential to motivate the employee, and eliminating the opportunity to 'bring them into the team'.

##### Staff and Management

Two members of staff are presently attending external courses. It is significant that there is a perception of either working or learning; that the two are not seen as compatible. There is little evidence of planned learning taking place during normal working situations.

### Appendix 3. Employee Development Strategy and Policy at M E Ltd

#### Continuous Development. Its importance from Chief Executives

The Chief Executive does not support 'continuous development'. He fears the consequences of continuous development would be either an increased wages/salaries bill, or increased labour turnover, (due to perceived fact, that higher qualified and experienced personnel will seek more money or a 'better' job). The senior management team has undertaken no management training.

Financial costs of training are seen as prohibitive. In addition, any time away from primary activities - hands on value adding activities - does not help achieve the job. Pay back analysis concepts must be understood, in order to appreciate the difference between high investment/low running cost systems, verses low investment/high running cost systems.

The following example illustrates the Managing Director's perception of continuous development's importance. An administrative assistant, in her 20's, who had been with the organisation for seven years, sought alternative employment. Her pay for the type of work was well above average. However, she had been doing essentially the same job since she joined the organisation, with little opportunity for development. She had been offered no formal training during this time, nor empowered to carry out more varied duties. The Managing Director did not understand why she wanted to leave.

#### Analysis and Conclusions of the Existing Situation at THE COMPANY LTD.

What has this report lead to?

I refer again to Harrison's definition of employee development. According to that definition, there is NO employee development within THE COMPANY operations. The company has no overall human resource strategy (above basic numbers required), learning experiences inevitably do occur but are not planned, nor highlighted, there is little emphasis on performance improvements and individual growth is not on senior management's list of priorities.

What are the likely consequences of this failure to implement employee development?

- 1/ The company is missing an excellent opportunity to help achieve organisational goals, because an experience and suggestion resource is not being utilized.
- 2/ Without support, performance improvement and capability development factors decline.
- 3/ Poor retention of the most valuable staff.
- 4/ Low morale within the organisation.
- 5/ Potential loss of the very orders now being placed upon THE COMPANY, because of low OEM tolerance to non-improving organisations.

### Appendix 3. Employee Development Strategy and Policy at M E Ltd

#### Analysis/Discussion of the Current Situation

Directors are not using the framework mission statements, policies and strategies to drive the business. This appears to be due to the company's original form, where there were no shareholders outside the founding family. Therefore, no external pressure to follow such a protocol was experienced. In addition, any objectives which have been agreed are not filtered down through the organisation.

As a result the business is likely to suffer as activities can not be directed according to company objectives. Any organisation will struggle to succeed if the majority of its workforce is unaware of the intended purpose and direction of the company.

Both internal and external factors have changed since the company was founded ten years ago. The culture that was appropriate at that time with only twenty employees, is no longer the optimum for the company as it is now, or how it will be. The company requires a shift in culture, with improved communication, trust and delegation of responsibilities. Information that is relevant to the company's objectives must be passed on to the employees at all levels to enable them to ensure that their actions contribute towards those objectives.

Managers can not be expected to give priority to something that is not measured. It is only once a system is in place to systematically identify learning needs, that such requirements can be properly dealt with.

It is the company's short-term perspectives which encourage an emphasis on today's performance rather than planning for tomorrow's performance. Managers need to understand longer-term advantages of meeting their subordinates learning needs.

The instances where new shop floor personnel are so urgently required that training took low priority, were caused through bad planning and poor communication between departments. The result is a much slower learning curve for new recruits and consequently lower productivity. In addition, minimal 'sitting next to Nellie' training, is more likely to result in a new employee leaving the company during the induction crisis period. This has the opposite effect of the original intention of foregoing the training which was of course to increase employee numbers as rapidly as possible.

The reasons that shop floor personnel specialise in one area are as follows:

- If the job is performed satisfactorily, why should they be trained to do something different?
- Perceived time-loss to teach different skills.
- Few people available to 'train'.

Managements' priority is productivity. They do not perceive an organisational advantage where people enjoy their work. This further evidence of short term thinking. Because of

### Appendix 3. Employee Development Strategy and Policy at M E Ltd

managements rather detached 'Them and Us' view, they do not consider the indirect advantages to productivity through increased motivation, company loyalty and lower staff turnover.

There are advantages of the 'sitting next to Nellie' approach; it is cost-effective and not time consuming for trainers. As previously discussed, it is also very relevant to the actual job and therefore 100% transfer of skills. However, at times of rapid expansion, the high number of new recruits may make this approach to training less effective. For example: A section of 15 people with five new recruits will struggle to maintain normal standards of productivity and may perceive their own work being interrupted by trainees. This is not an atmosphere that will encourage learning.

Managers should make it their business to know what their subordinates are learning on external courses. This should be followed up with visible interest in there subordinates progress on the course motivating them and encouraging them to implement any new knowledge/experience they have incorporated in to the workplace.

Low staffing levels result in prioritising performance on the immediate jobs at hand, as opposed to planning performance for the future. Also the company culture emphasises roles performed by people, rather than the people themselves. Therefore as long as the role is performed satisfactorily, there is no apparent need for planned learning.

In the short term, a company can survive without continuous development of its staff. However, in the longer term, it is likely that staff will find their jobs unfulfilling and will seek alternative employment. To replace staff would be both time consuming and expensive. Even staff who remain with the company are likely to become demotivated and therefore perform less well. A process of education is needed, starting at the top of the organisation to ensure an understanding of these issues.

#### Performance Management

Without any systematic performance management, employees have no clear indication of standards required, how they are performing against these standards, and how they can improve. Without a direct link from organisational objectives to individual objectives, the work done by an individual can not be expected to contribute to organisational goals. This represents a lost opportunity to help improve both the individual and the organisation.

#### Management Development

Managers should play a vital role within a learning organisation. They have to pass on the values, through their own actions. They need to understand the importance of employee development and implement the policies. Any changes to the existing organisational culture must come from the top of the organisation.

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### Career Development

As the organisation is expanding, vacancies will occur within the middle management hierarchical structures. Without career development, these vacancies will be filled on an ad-hoc basis, which is likely to be from outside the organisation. Senior management should recognise the potential advantages of 'growing our own' ie. developing people from within the organisation who have an indepth knowledge of the company, its processes and problems.

### Training

The reason so little training is undertaken is that rewards are often not immediately obvious and quantifiable. However a longer term approach to training would prove beneficial in productivity, motivation and commitment, etc.

### Culture Change

A collaborative culture should be developed with leaders, advisors and facilitators as opposed to order compliance. Line managers should be encouraged to take responsibility for personnel issues including assessment, rewards and development. In addition the Company should improve communication and trust, with 2-way briefings and empowerment. Employees should be encouraged to adopt the idea of common personal and organisational goals.

### Investors In People

Investors in People has the direct objective of promoting Employee Development in a strategic and business-led manner. In order to qualify for IIP a company has to demonstrate the following:

- Employee Development plans which are tied to strategic objectives.
- Plans deriving from a systematic analysis of organisational and individual needs.
- A development function which is well integrated with other business functions.
- Monitoring and evaluation of activities

The author recommends the adoption of IIP as it will enhance individual and organisational growth and prosperity through:

- Improved Quality
- Increased motivation
- Greater Customer Satisfaction
- Enhanced Company Reputation

The costs of implementing such a programme are low and funding is available.

### Appendix 3. Employee Development Strategy and Policy at M E Ltd

#### National Vocational Qualifications (NVQ's)

The introduction of NVQ's into the workplace would help THE COMPANY to:

- Identify Training Needs
- Set Training Targets
- Recognise Staff Achievements
- Retain Staff by Motivating/Involving Them
- Develop A Multi-Skilled Workforce
- Improve Company Performance

Employees would benefit from NVQ's through recognition of their achievements, identification of any skills gap and through their self-development. THE COMPANY would benefit from the identification of standards and competencies, the framework to focus on development and the prestige associated with the 'IIP' label.

#### The Prevailing Culture at The Company:

A high percentage of the workforce are dissatisfied at work and do not feel valued by the organisation; significant numbers intend to leave in order to gain the satisfaction they crave. Only limited training or employee development takes place, which is mainly during the first few months of employment. There is pride in the company products, although it should be noted that this is not the same as pride in the company itself, a question that Directors did not want the author to ask. Shop-floor employees see themselves as the back-bone of the organisation but they indicate that management does not appreciate their efforts.

Communication barriers exist between both shop-floor employees and their supervisors, and staff and their managers. Shop-floor employees know what standards are required from them, due to the visible nature of the work. Company objectives and feedback on their work, which would require communication, are less clear. Communication quality between staff and management leaves staff with insufficient knowledge of either standards, feedback or overall objectives.

Management style within Marvic-Empe leaves a significant number of employees craving more responsibility or guidance. There is a huge source of potentially valuable information being left untapped due to a lack of work-related discussions between supervisors and their subordinates. Senior management is not considered to be particularly approachable. **If We Introduce Appraisal What Type Would Be Most Appropriate ?**

It may not presently be viable to introduce appraisal; however the following points should be noted for any future implementation

Goals - It is vital to consider the aims of any appraisal scheme, as conflicting goals must be avoided.

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Formal/Informal - There should be a formal procedure to the appraisal scheme but any formal interviews need to be supported by ongoing informal communication between employees and their managers.

Who To Appraise - It is vital that any appraisal scheme is perceived as being fair. Therefore it is not appropriate to plan appraisal for one group of employees and not another. It would only be valid to initially introduce appraisal to a small group of employees if this was as a pilot scheme, with the communicated intention that if successful, it would be introduced to all.

Open or closed - An open appraisal (results available to the employee) has the advantage that justice is seen to be done. A manager who has to justify his comments is likely to be more careful in his assessment. A closed appraisal would fuel existing suspicion/apprehension about appraisal.

Confidentiality - It should be a condition of employment for any administration staff that they maintain the strictest confidentiality.

Timescales - Extensive training would be needed to achieve a successful appraisal system. Therefore the potential success of a company-wide scheme can not be judged from a short pilot for which only a brief training sessions are given. Shop-floor employees, staff and management would have to be committed to the scheme. A pilot scheme would need extensive planning and should be run for at least 12 months.

How to appraise - 2-way appraisal can be of more benefit than 1-way. However as individuals need to feel involved in the process, self-appraisal must also be encouraged.

Forms - Paperwork should be kept to a minimum.

Timing - Formal interviews should take place annually or biannually, plus supplementary appraisal when an employee is transferred between sections.

## CONCLUSIONS

### The Company's Culture is At Odds With Appraisal Philosophy

Any potential appraisees are currently highly suspicious of the appraisal process. As a result they would be defensive, would not communicate openly, and therefore would not gain the benefits from the process discussed above.

Appraisal inevitably involves additional paperwork for a manager/supervisor. Managers at the company presently have 'too much on their plates' to accommodate such a scheme, therefore an imposed appraisal simply would not survive.

The Company has a strong 'firefighting' culture. Appraisal would not work in such an environment, as tasks and events are perceived to be unpredictable and uncontrollable.

Patten (1982) criticizes the '*mindless checking judgmental boxes on a graphic rating sheet*'. He notes that any successful appraisal scheme requires analysis. If appraisal were to be pushed forward by senior management at the company, this is exactly how the exercise would be viewed, particularly by supervisors who are busy firefighting.

Appraisal would only be successful if the annual or bi-annual formal interview were supported by day-to-day informal 2-way communication. This is unlikely in the present culture at the company.

Senior management must be committed to performance appraisal, and other managers throughout the organisation would need to be given high quality training for the scheme to be successful. Given the organisation's history of only minimal training, it is unlikely that senior management would support this. They may attempt to cut corners, avoid spending the money needed to help managers learn how to give an effective performance appraisal.

The report has shown that there are many aspects of appraisal which would benefit the company. Yet the present culture within the organisation is not conducive to its introduction. Therefore, before the organisation can contemplate appraisal, the culture would need to change.

An analytical paper produced by a research student from Warwick University independently noted the importance of culture change:

*'A change in culture is also required at the shop-floor level. Some way must be found for employees to become more involved in the process and understand the need for consistent quality and performance.'*

Sylvan Sitkey July 1994, Analysis by the Time Compression Programme



### Appendix 3. Employee Development Strategy and Policy at M E Ltd

The important words used here are INVOLVEMENT, UNDERSTANDING and CONSISTENT QUALITY AND PERFORMANCE, which are currently lacking at The Company Ltd.

The author cannot, however, justify a culture change merely for the introduction of an appraisal scheme. Appraisal should only be introduced as part of a planned and co-ordinated improvement programme.

This investigation into the feasibility has revealed a 'hornets nest' of employee relations problems. A common cause of long-standing performance problems is that managers do not accept and confront their employee performance appraisal responsibilities

## **9 - RECOMMENDATIONS**

Due to the present company culture, the author does not recommend the immediate introduction of a formal appraisal scheme. There needs to be a solid foundation of good management practice before a performance appraisal scheme can be successfully constructed. It is not practical to recommend that all managers and supervisors at the Company undertake training in all areas of people management at once. However they represent a key group within the organisation and therefore it is of vital importance to the Company that they should be effective as managers. Therefore they should follow a course of basic management training.

Employee Performance Problems - A FOCUS ON PRESENT PERFORMANCE is required, rather than on old records. Prompt identification and consistent corrective action is needed, keeping in mind the objective of helping the individual to grow.

In the future when an appraisal scheme is considered applicable, it should be noted that success depends more on the preparedness of managers than on the systems themselves. Therefore as much effort should be invested in PREPARING THE SYSTEM USERS as in the systems.

WELCOME SUGGESTIONS. Shop-floor employees are in a privileged position to identify potential improved working practices. Case studies at Nissan Yamamoto have indicated that it could be counter-productive to introduce a typical 'suggestion box'. Individual motives (for a financial reward or merely a personal pat on the back) would conflict with team identification. Therefore a fuller relationship between managers and their subordinates should be actively encouraged, enabling frequent 2-way communication. Everyone in the company in process analysis techniques, for example Crosby's 'Concepts of Quality Improvement'.

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**LISTEN TO WHAT EMPLOYEES ARE SAYING.** The author believed she was not guilty of falling into the same trap as many of her colleagues of dismissing the ideas of shop-floor employees in terms of improvements in the workplace. However she was surprised by the amount of useful information gained from employees answering the open question about attitudes towards appraisal. Her initial intention was to merely determine percentages of employees in favor of or against an appraisal system. This would have ignored the important contribution that all employees can make through their comments and suggestions. Having learnt from her own mistakes, the author can not express strongly enough the importance of **LISTENING TO EMPLOYEES** for the benefit of the ideas contained, as well as for the self-esteem of those being given the opportunity to express their views.

### **Practical Recommendation For Implementation**

The Company could follow the example set by Nuffield Hospitals, as discussed by John Wilson and Graham Cole (1990). The appraisal scheme there focuses on the attainment of **PERSONAL OBJECTIVES**. This report has revealed a high percentage of both shop-floor and office personnel rarely feeling valued. Therefore a scheme which concentrates on the positive side of individuals' performance would be of great benefit to both employees and the organisation as a whole. Communication is a vital factor; managers should communicate to staff:

- The content and scope of their job, including the results they are expected to achieve
- How they are progressing and the fact that their achievement is recognised.
- Feedback on their career prospects and personal development.
- Freedom / encouragement to communicate with their immediate manager about personal progress and work generally.

The appraisal scheme need not be named as such, to avoid certain negative preconceptions from both management and subordinates. It could be called the personal development programme. This programme should be available to all personnel. Each individual's job is as important to them as any others (as illustrated by the questionnaire). Everyone should have the right to personal development.

#### **How Would Personal Development Programme Work ?**

- All personnel to have 6 monthly or 12 monthly interview with manager.
- Actions are to be agreed which help both the manager and subordinate to develop professionally.
- Subordinate must be the main driving force. Self-evaluation is the key to this approach, and SELF CRITICISM IS THE EASIEST TO ACCEPT. The manager 's role becomes that of coach.
- Appraisal is 2-way. Managers also learn from subordinates.
- Managers must play an active role in developing their subordinates, increasing their happiness at work , morale and personal growth. .

### Appendix 3. Employee Development Strategy and Policy at M E Ltd

#### Setting

The interview should be conducted in an area away from distractions, and sufficient time should be allocated for the process. The one-to-one equal partnership should be stressed.

A simple form may be used by the subordinate to jog his memory. This should be discarded after the interview; if it was kept on record the subordinate may feel less inclined to be truthful. The questionnaire should be designed to encourage the manager and subordinate to think about performance, and should cover praise for present achievements, assessment of both subordinate's and manager's performance.

The outcome of the interview should be that development actions are agreed by both parties.

Following the interviews, heads of departments should hold debriefing sessions with senior management to decide training requirements.

Appraisal interviews should act as the starting point for year-round employee coaching, as opposed to the finishing point.

In many cases the most effective training is on the job, working for a good manager and being given responsibility. The manager should be encouraged to discuss the subordinate's progress, to delegate, encourage, praise and enhance performance.

#### Selling the Scheme

A residential course would facilitate senior management's acquisition of the key skills required to do the job of appraisal well. It is vital that senior management are prepared to invest both the time and the money to get the scheme set up correctly. The residential should include practical training in interview techniques and counselling skills.

Subsequently all managers and supervisors should be trained, ideally for 1 day.

The following recommendations will ensure that the PERSONAL DEVELOPMENT PROGRAMME has the best chance of succeeding:

- \* Survey employee attitudes about PDP
- \* Design a single purpose system, not with multiple, conflicting objectives
- \* Keep forms simple and to a minimum.
- \* 2-Way personal development
- \* Convince managers that people are worth developing.

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- \* Train managers on how to conduct interviews, mentor and coach
- \* Managers to brief staff beforehand, so they know what to expect
- Monitor the process through departmental briefings after the interviews. This creates an opportunity for learning.

### **An Unconditionally Constructive Strategy**

Do only those things that are both good for the relationship, and good for us, whether or not they reciprocate.

- 1. Rationality.** Even if they are acting emotionally,  
**balance emotions with reason.**
- 2. Understanding.** Even if they misunderstand us,  
**try to understand them.**
- 3. Communication.** Even if they are not listening,  
**consult them before deciding** on matters that affect them.
- 4. Reliability.** Even if they are trying to deceive us, neither trust them nor deceive them;  
**be reliable.**
- 5. Noncoercive modes of influence.** Even if they are trying to coerce us, neither yield to that coercion nor try to coerce them;  
**be open to persuasion and try to persuade them.**
- 6. Acceptance.** Even if they reject us and our concerns as unworthy of their consideration,  
**accept them as worthy of our consideration,  
care about them, and  
be open to learning from them.**

(Fisher and Brown 1989)

***Unconditionally Constructive***

<b>Unconditionally constructive advice:</b>	<b>Good for the relationship because:</b>	<b>Good for me because:</b>
1. Balance emotion with reason.	An irrational battle is less likely.	I make fewer mistakes.
2. Try to understand.	The better I understand you, the fewer collisions we will have.	The less I shoot in the dark, the better solutions I can invent and the better able I am to influence you.
3. Inquire, consult and listen.	We both participate in making decisions. Better communication improves them.	I reduce the risk of making a mistake without giving up the ability to decide.
4. Be reliable	It tends to build trust and confidence.	My words will have more impact.
5. Be open to persuasion; try to persuade.	If people are persuaded rather than coerced, both the outcome and compliance are better.	By being open, I keep learning; it is easier to resist coercion if one is open to persuasion.
6. Accept the other as worth dealing with and learning from.	To deal well with our differences, I have to deal with you and have an open mind.	By dealing with you and reality, I remove obstacles to learning the facts and to persuading you on the merits.

(Fisher and Brown, 1989)

## Appendix 4. Preconditioning Materials Selected by the Focus Group at M E Ltd

### *Don't Bargain Over Positions*

- People:** Separate the people from the problem.
- Interests:** Focus on interests, not positions.
- Options:** Generate a variety of possibilities before deciding what to do.
- Criteria:** Insist that the result be based on some objective standard.

### **PROBLEM**

#### Position Bargaining: Which Game Should You Play?

<b>SOFT</b>	<b>HARD</b>
Participants are friends.	Participants are adversaries.
The goal is agreement.	The goal is victory.
Make concessions to cultivate the relationship.	Demand concessions as a condition of the relationship.
Be soft on the people and the problem.	Be hard on the problem and the people.
Trust others.	Distrust others.
Change your position easily.	Dig in to your position.
Make offers.	Make threats.
Disclose your bottom line.	Mislead as to your bottom line.
Accept one-sided losses to reach agreement.	Demand gains as the price of agreement.
Search for the single answer: the one <i>they</i> will accept.	Search for the single answer: the one <i>you</i> will accept.
Insist on agreement.	Insist on your position.
Try to avoid a contest of will.	Try to win a contest of will.
Yield to pressure.	Apply pressure.



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<b>PROBLEM</b>		<b>SOLUTION</b>
Positional Bargaining: Which Game Should You Play?		Change the Game - Negotiate on the Merits
<b>SOFT</b>	<b>HARD</b>	<b>PRINCIPLED</b>
Participants are friends.	Participants are adversaries.	Participants are problem-solvers.
The goal is agreement.	The goal is victory.	The goal is a wise outcome reached efficiently and amicably.
Make concessions to cultivate the relationship.	Demand concessions as a condition of the relationship.	<b>Separate the people from the problem.</b>
Be soft on the people and the problem.	Be hard on the problem and the people.	Be soft on the people, hard on the problem.
Trust others.	Distrust others.	Proceed independent of trust.
Change your position easily.	Dig in to your position.	<b>Focus on interests, not positions.</b>
Make offers.	Make threats.	Explore interests.
Disclose your bottom line.	Mislead as to your bottom line.	Avoid having a bottom line.
Accept one-sided losses to reach agreement.	Demand gains as the price of agreement.	<b>Invent options for mutual gain.</b>
Search for the single answer: the one <i>they</i> will accept.	Search for the single answer: the one <i>you</i> will accept.	Develop multiple options to choose from; decide later.
Insist on agreement.	Insist on your position.	<b>Insist on objective criteria.</b>
Try to avoid a contest of will.	Try to win a contest of will.	Try to reach a result based on standards independent of will.
Yield to pressure.	Apply pressure.	Reason and be open to reasons; yield to principle, not pressure.

Fisher and Ury (1981)

## Appendix 4. Preconditioning Materials Selected by the Focus Group at M E Ltd

### Quotations Used for Preconditioning

"The key to superior multibusiness teams is great group dynamics: fast decision making with plenty of conflict over content, but also with deep social bonds that limit interpersonal conflict. To create this group process, these teams rely on frequent meetings to build familiarity and trust, data-rich information to develop a shared intuition, and clear turf boundaries so that politicking is kept to a minimum". Eisenhardt, K. and Galunic, D. (2000) Coevolving: At Last, a Way to Make Synergies Work Harvard Business Review. January-February 2000, Pages 91-101.

"The success of a partnership with a Japanese company is directly related to the strength of inter-personal relationships." Brennam, L. and Block, D. (1991) Business Etiquette: The Complete Book of-: The Essential Guide To Getting Ahead In Business, Judy Piatkus Publishers Ltd, London.

"The basis of Japanese etiquette is respect-for individuals, companies, ideals and methodologies. Respect is demonstrated in every aspect of good behaviour. For example, when a Japanese agrees to allow you to pay for lunch, he is respecting your right and ability to do so." Brennan and Block, 1991, p153

"You must have a culture that encourages qualities like relentless pursuit, bottomless resources of imagination, and both smooth teamwork and individual autonomy." Champy 1995. p76.

"reducing hierarchy, bureaucracy, and the rest of it is not just a matter of rearranging the furniture to face our customers and markets. It is a matter of rearranging the quality of peoples attachments - to their work and to each other." Champy 1995. p77.

#### "Six Ways To Make People Like You

Rule 1: Become genuinely interested in other people.

Rule 2: Smile

Rule 3: Remember that a man's name is to him (/her) the sweetest and most important sound in (his/her) language.

Rule 4: Be a good listener. Encourage others to talk about themselves.

Rule 5: Talk in terms of the other man's (/woman's) interests.

Rule 6: Make the other person feel important-and do it sincerely." From Carnegie, 1938 p121.

#### "Twelve Ways of Winning People to Your Way of Thinking

Rule 1: The only way to get the best of an argument is to avoid it.

Rule 2: Show respect for the other man's opinions. Never tell a man he is wrong.

Rule 3: If you are wrong, admit it quickly and emphatically.

Rule 4: Begin in a friendly way.

Rule 5: Get the other person saying "yes, yes" immediately.

Rule 6: Let the other man do a great deal of the talking.

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Rule 7: Let the other man feel that the idea is his.

Rule 8: Try honestly to see things from the other person's point of view.

Rule 9: Be sympathetic to the other person's ideas and desires.

Rule 10: Appeal to the nobler motives.

Rule 11: Dramatize your ideas.

Rule 12: Throw down a challenge."

Carnegie, 1938 p192

#### "Nine Ways to Change People Without Giving Offence or Arousing Resentment

Rule 1: Begin with praise and honest appreciation

Rule 2: Call attention to people's mistakes indirectly.

Rule 3: Talk about your own mistakes before criticizing the other person.

Rule 4: Ask questions instead of giving direct orders.

Rule 5: Let the other man save his face.

Rule 6: Praise the slightest improvement and praise every improvement. Be "heartily in your approbation and lavish in your praise".

Rule 7: Give the other person a fine reputation to live up to.

Rule 8: Use encouragement. Make the fault seem easy to correct.

Rule 9: Make the other person happy about doing the thing you suggest.

Carnegie, 1938 p219

#### "Seven Rules for Making Your Home Life Happier

Rule 1: Don't nag.

Rule 2: Don't try to make your partner over.

Rule 3: Don't criticize.

Rule 4: Give honest appreciation.

Rule 5: Pay little attentions.

Rule 6: Be courteous.

Rule 7: Read a good book on the sexual side of marriage."

Carnegie, 1938 p254

As Champy "participated in and observed reengineering projects in hundreds of corporations, [he] ..noticed striking similarities in the values and behaviours promoted by their different cultures." He goes on to say: "What's emerging, is a broad, humanly satisfying culture of willingness, the willingness, specifically...

1. To perform up to the highest measure of competence, always.
2. To take initiatives and risks.
3. To adapt to change.
4. To make decisions.
5. To work cooperatively as a team.
6. To be open, especially with information, knowledge, and news of forthcoming or actual "problems."
7. To trust, and be trustworthy.
8. To respect others (customers, suppliers, and colleagues) and oneself.

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9. To answer for our actions, to accept responsibility.
10. To judge and be judged, reward and be rewarded, on the basis of our performance.”  
Champy 1995. p78/9.

### ELECTRONIC COMPONENTS A PRACTICAL GUIDE FOR PURCHASERS AND SUPPLIERS CODE OF GOOD PRACTICE NEDC

#### THE CODE OF PRACTICE AS IT RELATES TO THE SUPPLIER

1.1 If seriously intent on making a commercial sale, the supplier needs to field a professional salesman who is likely to be persona grata with the purchaser. Continuity of sales force personnel plays an important part in developing the appropriate relationship. The salesman needs to be technically competent yet able and willing to draw on as much additional technical input as may be necessary.

1.2 The honesty and integrity of the sales staff must be beyond doubt. They must have the right and ability to commit their companies to supply contracts which they themselves believe are achievable. However, as the commitment is to achieve some future activity, the purchaser must also use vendor assessments to give assurance that the contract is likely to be achieved.

1.3 The supplier provides a service to the purchaser and should be committed to meeting all the purchaser's defined needs.

1.4 The supplier should become fully conversant with the purchaser's invoicing procedures to enable prompt and consistent payment by the purchaser as agreed in the conditions of contract.

1.5 The salesmen should be responsive to the customer's needs and must be able to rely on consistent support from their office.

1.6 Where a salesman agrees to supply goods as a single source to his customer, he should recognise the absolute nature of the commitment and obtain the backing of his organisation. In this situation the customer really is always right.

1.7 The salesman must be fully aware of his company's production scheduling and must not accept orders unless there is capacity at the required time.

1.8 The salesman needs to take time out to understand the motivation of customers - what is important to them, why and what future problems they expect to encounter. The salesman needs to track the purchaser's requirements leading to a 'Best Buy' and to follow up all leads and opportunities with interest and determination.

1.9 The supplier also needs to open up channels into the technology area, to consider improving existing products and developing new ones in conjunction with the purchaser, to

#### Appendix 4. Preconditioning Materials Selected by the Focus Group at M E Ltd

enable the best product to be offered to the customer and carry out awareness training in new technology/products.

1.10 Depending on the nature of the relationship, the salesman must be willing and able to involve management of all disciplines to help manage/meet the needs of the customer. This includes all aspects of quality, delivery and service.

1.11 A good supplier will be anticipating the customer's future needs.

#### THE CODE OF PRACTICE AS IT RELATES TO THE CUSTOMER

2.1 The honesty and integrity of the purchasing staff must be absolute. They must have the right and ability to commit their company to purchasing contracts.

2.2 A purchaser needs to understand the commodity market place in which he is operating. He needs to know the players, their strengths and weaknesses. He should know what his competitors are doing, where they are buying and why. He should keep himself informed of the supply and demand situation for the commodity of the national and world-wide basis.

2.3 A purchaser should understand the product he is buying, not the immense technical detail, but at least to the level of what it does and why. Only then can he act as an effective agent between the supplier and his technologists.

2.4 Commodity purchasing managers should be totally responsible for actions and decisions in their commodity area. Advice and guidance may be given by their Line Managers, but not instructions.

2.5 The purchaser should regard himself as providing a service to his customers, whoever they are (production, marketing, sales, design, R & D etc.). The purchaser has a commitment to these customers to succeed, not to find excuses for failure. There are no problems, only opportunities.

2.6 The purchaser has a unique responsibility to optimise the "Best Deal" having regard to specification, quality, product reliability, delivery reliability, price, supplier reliability, lead time and batch size. The definition of "Best Deal" is unique for every situation which is why the professionalism and understanding of the function is so essential.

2.7 The purchaser should act responsibly to ensure the prompt and consistent payment of suppliers within the contracted time period. This period should be reasonably short and not to exceed that which the purchaser agrees with his own customers. This is of even greater importance where large companies purchase from smaller suppliers, since otherwise the purchaser's work-in-progress in effect has to be financed by the small supplier for whom credit is likely to be more expensive.

2.8 The purchaser, in order to fulfil 2.5 and 2.6 above, must have an absolute right to call upon anyone within his organisation, including marketing, production and quality, for

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clarification of the requirements, and indeed must know who to call on when support must be given.

2.9 Technical Back-up. In paragraph 2.8, the need for the purchaser to be able to call on internal resources was established. This can of course only happen if the purchaser himself is willing to do so. Part of the purchaser's professional responsibility is to take the best technical advice available.

2.10 The purchaser should get to know the suppliers well and needs to understand their motivation, ability, skills, commitment to customers, processes, flexibility, inventory policy etc. Only in this way is the purchaser able to arrive at a balanced and correct answer to 2.6 above.

2.11 Vendor Assessments. In order to establish supplier credibility within a purchasing organisation, it is essential to conduct Vendor Assessments involving staff from purchasing, quality, design and finance. This provides an up-front opportunity to get to know the supplier in depth and can avoid a lot of misunderstanding.

2.12 Single Sourcing. This decision by a purchaser to single source a requirement can give benefits in volume terms, consistency of quality and style, but clearly can only work if there is an absolute commitment given by the supplier to meet the purchaser's needs. This can work out very well in practice, but clearly all the 'what if' scenarios need to be examined.

### THE CODE OF PRACTICE AS IT RELATES TO THE RELATIONSHIP BETWEEN PURCHASER AND SUPPLIER

3.1 The reason for stressing the need for professionalism in this relationship is not to boost membership of any Institutes, but to ensure that the purchaser and supplier can be totally trusted to work together without compromising themselves, their companies or their agreements. This is an essential ingredient to the relationship and puts a heavy responsibility on both parties.

3.2 Both buyer and seller should recognise that the supplier is in effect an extension of the purchaser's own operation and channels of communication should be set up and structured accordingly. The supplier also needs to understand the purchaser's organisation if they are to position themselves in such a way as to be effective.

3.3 Where single sourcing is appropriate, a 'special relationship' needs to exist where both sides recognise the absolute nature of their responsibilities. The purchaser needs to understand and respect the limitations of the supplier and the supplier has to be committed to responding to meet the purchaser's needs. If the supplier accepts the role of single source, then there is an absolute duty to perform. No excuses.

3.4 The technical complexity of product is often high, including instances where the full specification is not known at the time of initial contract. Purchasers and suppliers have a mutual responsibility to ensure that the technical decision makers are kept well briefed and if

## Appendix 4. Preconditioning Materials Selected by the Focus Group at M E Ltd

possible, should arrange regular technical meetings between the parties. Where necessary, arrangements should be made to exchange confidentiality agreements between the parties to enable this process to take place.

3.5 Vendor Ratings should be carried out to monitor the performance of the supplier originally chosen through the Vendor Assessments. These ratings should be carried out with full co-operation of the vendor and should not be seen as 'policing'. Following ratings, joint reviews should take place to discuss any problems.

3.6 A stable relationship between the supplier and the purchaser leads to the best results. This needs to be reviewed regularly, worked at like any relationship and the parties need to be frank and honest. Both parties should keep the other informed of their intentions so that the other may respond constructively.

3.7 Where the nature of the product dictates that an arms length relationship is appropriate e.g. low value miscellaneous items, effort should be made to reduce cost to both parties. It may be possible to establish some form of 'in-house distributorship' whereby the product is not bought until it is actually needed, but whereby using one distributor some volume benefit can be obtained.

### **Procedure for Preconditioning**

The procedure proposed by Pondy and Huff was used as the procedural guideline for preconditioning programme. The procedure follows what was agreed to be a suitable sequence to clarify the current state and reduce both ambiguity and potential conflict:

1. Make small changes that seem reasonable within both policy frames; avoid decisions and actions that are unreasonable within either frame.
2. Assess the plausibility of both frames by:
  - (a) Monitoring external events more intensively;
  - (b) Monitoring the effects of the small incremental actions that are taken.
3. Begin to develop an information base that will permit major changes to be made if and when it becomes clear that major changes are required.
4. Send ambiguous signals to the organisation that are consistent with both frames in order to maximise flexibility to go either way. Do not immediately discredit the current frame.
5. Attempt privately to re-articulate the current policy frame so that its plausibility can be assessed more fully; at the same time begin to develop the elements of an alternative plausible policy frame within an inner circle of trusted policy makers.
6. Avoid making irreversible decisions and commitments until deadlines force you to do so; delay action as long as possible so that a maximum of information is available.
7. Begin to create the awareness more broadly among various stakeholders that some change may be necessary.

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8. If and when it becomes clear that more permanent changes will be required, develop support for partial solutions that will gradually cumulate into a new strategy.
  9. Develop the necessary slack resources that will permit a partial, rather than a total, response to the immediate (but perhaps temporary) changes in the environment.
  10. Throughout the process of adaptive response, identify and protect the core activities of the (business units in question), and also protect the credibility of the administrative structure.
- Pondy, L., Boland, R. and Thomas, H. (1988) *Managing Ambiguity and Change*, Wiley, Chichester.

The supplier development programme given below was created during the preconditioning sessions as a simulation of what the focus group, facilitated by the researcher, considered assembler customers would consider a suitable approach to developing their suppliers. This supplier development programme uses human resources management as the agents of change rather than the conventional purchasing driven initiatives.

#### HRM Based Supplier Development Programme

1. HRM manager to define Internal Development Champion role, characteristics and performance criteria.
  - To act as development director
2. HRM manager to review existing staff functions, roles, opportunities to develop existing staff, and those *sensitive* to technical and managerial issues.
  - This should follow Fitz-Enz' (1993) Staff Benchmarking model.
  - In organisations where a mandate has been made that further recruiting is forbidden to re-arrange subordinate employees to report to other managers.
  - Where there is 'fat' in a department, take those extra professional personnel, who are sensitive to technical and managerial issues to form the Supplier Development Team.
3. Select the Internal Development Champion
  - To oversee all development and improvement activities
  - Selection made based upon information node role, supplier problems, politics and mechanisms description honesty
4. Select the Internal Supplier Development Champion
  - To set in motion the mechanisms for supply chain development
5. Define competitors characteristics and performance criteria
6. Monitor and 'snap shot' conditions to decide on direction.
7. State the initial conditions and driving forces acting on each participant in the industry. Requires the mission statement to contain direction and senior Source company management, commitment and tolerance,



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8. Request benchmark feedback from suppliers and customers of internal activities.
9. Benchmark local resource requirements
10. Benchmark remote resources
11. Define internal role
12. Define locally supported strategic roles
13. Define internal and suppliers' ideal characteristics and performance criteria
14. Categorise suppliers dependent upon relative start points, location, current performance, demonstrated acceptance and implementation of change into active, passive, potential and reject. Classify internal and suppliers that have grades ABC into Strategic Aligned, Strategic Independent, Spot Commodity.
15. Select or de-select suppliers
  - Deselect non active, poor suppliers,
  - Deselect suppliers based upon competitive performance comparison between suppliers for long term contracts
16. Select the Suppliers' Champion
  - Based upon information node role, supplier problems, politics and mechanisms description honesty
  - Nominate, vote, order, direct, specifically employ, invite,
17. Develop information node staff
  - To enhance suppliers' internal performance
  - To gain suppliers' internal management commitment
  - To enhance quality of information, speed, accuracy, timeliness

## Appendix 5. Filled Interpretation Matrices

Generic Development Methods (Interpretations) Matrix example filled in	- Page 326
M E Ltd Interpretations Matrix	- Page 342
NP Ltd Interpretations Matrix	- Page 328
PU, YM, AAP and UDC hybrid Interpretations Matrix	- Page 357

NOTE : IN ORDER TO COMPLY WITH COPYRIGHT REPRODUCTION RESTRICTIONS, THIS PDF VERSION OF THE THESIS HAS HAD APPENDIX 6 REMOVED.

- Newlands, D. and Southey, P. (1994) Which Information system is the most Advantageous? How should OEMs relate to Material Suppliers? 3th Annual IPSERA Conference, Glamorgan, UK, 28-30 March.
- Newlands, D. and Southey, P. (1994) Material Supplier, Component Supplier and OEM Information Flow Effects, 10th National Conference on Manufacturing Research, Loughborough University of Technology, UK, 5-7th September 1994.
- Southey, P. and Newlands, D. (1994) Supply Networks: Can Customers Drive Supplier Improvements? 10TH IMP Annual Conference, Groningen, The Netherlands, 29th Sept. - 1st October 1994.
- Newlands, D., Davis, A. and Southey, P. (1995) Motivation To Change the Supply Chain, 4th Annual IPSERA Conference, Birmingham, UK 11-12th April.
- Sherwin, G., Newlands, D. and Cotton, W. (1995) "The Use of a Design Methods Matrix to Improve Interdisciplinary Communication" 2nd National Conference on Product Design Education, Coventry University, 10-11th July,
- Newlands, D. and Southey, P. (1995) Supply Chain Development: Towards an Integrated Methodology, 12th Irish Manufacturing Committee Conference Proceedings, Cork, Gemini International Ltd, Dublin, 6th-8th September, p373-380.
- Newlands, D. and Southey, P. (1995) Business Resource Development: Towards an Integrated Methodology. Systems Science Conference Proceedings, Wydawnicza Politechniki Wroclawskiej, Wroclaw, Poland, 12th-15th September, p440-444.
- Newlands, D. (1995) Business Resource Development and Supply Chain Management: Towards an Integrated Approach, in Ashmore, S. (1995) Supplier Development: Measuring, Developing and Improving Supplier Performance, ICM Marketing Conference, London, UK, 11-12th December

Interpretations Matrix	PROCESS		
TARGETS	DRIVING FORCE	PSYCHOLOGICAL	PERSPECTIVE
INDIVIDUAL	A1 Financial survival, prosperity and security	B1 Internal drivers: don't be stupid - knowledge worker; don't be lazy - hard worker,	C1 Focus on the job, focus on surroundings, focus on external events, focus on conflict, focus on non-related issues
PERSONAL	A2 Self esteem, self development, competitive instinct, individualism,	B2 Game player; rebellious trying to gain recognition or individuality	C2 Focus on personal issues; contact and reference points;
INTER-PERSONAL	A3 Cohesion, partnership, competitive advantage.	B3 Win-Win contracts rather than win/lose. Non-game playing (Berne 1964).	C3 Focus on problem, not on people and positions.
GROUP	A4 Need to belong	B4 Part of a collective whole, individuality moulded or adapted to the collective - clique	C4 Focus on group harmony, pursuing commonality
TEAM	A5 Need to contribute, participate, compete	B5 Part of a collective whole while retaining individuality	C5 Focus on contribution of diverse skilled team members
HIERARCHY	A6 Centralised control versus decentralised entrepreneurialism	B6 That's not your job. If you don't do what you're supposed to do, it won't get done.	C6 Focus on authority, responsibility and accountability
ALLIANCE,	A7 Internal competition between teams, blame culture between management and workers (them and us) at an intra-organisational level	B7 Win/Win rather than game playing - prisoner's dilemma, win/lose. Dependence progresses to independence, with maturity ends in interdependence	C7 Short termism versus strategic agenda. Close to centre or a non-core protagonists
ORGANISATION	A8 Direct challenge or competition from substitute or potential replacement. Financial survival, prosperity and security	B8 Knee jerk reactions or ignore as if does not exist. Tactical short-termism rather than strategic long-term.. Focus on weaknesses and threats. Possible lip service only to analysis and exploitation of strengths and weaknesses.	C8 Focus on challenges - performance gaps, objectives, techniques, task and people, Perceive the bigger picture, processes or only functional activities; Customer oriented? Response imperative - sense of urgency. Focus on strengths and opportunities, or on weaknesses and threats?

DMM generic example filled in

CHANGE DRIVER	A9 Introduces and summarises the issues that drive change, suggests opportunities where improvement and development will likely lead to competitive advantage	B9 Leader of ideas rather than actions? Lets others express themselves. Listens. Summarises. Acts as chairperson and shaper. Keeps the target's discussion on the subject of interest. Time manages.	C9 Could anticipate, plan & define appropriate strategy. May not know the answer. Asks open questions to allow others to expand their understanding, come to conclusions, define plans and commit to them. Alternatively tries teaching, telling and demanding activities undertaken to a pre-defined plan - may create resentment.
ALLIANCE,	A10 External competition, blame culture at an inter-organisational level	B10 Win/Win rather than game playing - prisoner's dilemma, win/lose. Dependence progresses to independence, with maturity ends in interdependence	C10 Strategic agenda for core protagonists. Decision on equity links and joint investment. 500 year planning horizon (as used by Mitsubishi)
MONOPOLY,	A11 Technological or economic leadership; substitutes; anti-socialist movements - capitalist competition; EU legislation; customer leverage	B11 Intra-company group think; fear of substitutes - buy-out start-up companies, acquire patent rights; desire to crush niche intrants	C11 Individuals perception of job security; 'on to a good thing';
CARTEL,	A12 Economics based on finding adequate substitutes that challenge the status quo	B12 Inter-company group think; best interests with the shareholders;	C12 Dominance not threatened due to high cost of entry; public pressure and political maneuvering can impact internal policies
CO-OPERATIVE,	A13 Equal voting rights to avoid dominance - supplier, customer or competitor leverage	B13 No direct competition between co-operative members; herd psychology;	C13 Symbiosis rather than control of others with or without ownership (vertical integration or partnerships)
PARTNERSHIP,	A14 Synchronisation and co-evolution	B14 Strategically important relationships reinforced by commitment	C14 Interdependence
CONTRACTOR,	A15 Survival via profitable acceptance and fulfilment of project contracts	B15 Competitive proposition couched in competence, effective deployment for specific activities and durations	C15 Can decide to be, or not be dependent on repeat contracts; operates as a project based organisation

DMM generic example filled in

CLIENT,	A16 Fickle users; in ability to clarify requirements; low brand loyalty.	B16 Has an unfulfilled principal requirement and is willing to exchange value (cash) for goods or services to meet the requirements; Need for prestige or status manifested by manufactured goods.	C16 Sense of urgency associated with fulfilling the requirement - cognitive dissonance created when required to wait for a product to be produced and/or delivered - P/d ratio. Self perception; perceived requirements.
SUPPLIER	A17 Securing adequate provisions - quantity, quality, responsive to demand variations ie: variant flexibility & volume flexibility.	B17 Has all of the responsibility for provisions. In adversarial trading, probably has little authority to affect changes to designs.	C17 Degree of access to LRVP; focus on process flexibilities and internal logistics effectiveness;
CUSTOMER	A18 Recipient expectations - quality, cost, delivery, responsiveness; subjective or objective requirements	B18 Has all of the authority to decide which supplier to source from	C18 Forecast horizon - long range volume plans (LRVP), short term build schedules
EXTERNAL BODIES	A19 Competing stakeholder requirements and demands; competitors (products and keiretsu), substitutes, governmental bodies, scientific and technological leaders;	B19 Independence is considered vital to the role; service provision financed by collecting funds - taxes, duty levied, fees for services, copies of white papers, reports and standards	C19 External observation; unhindered by short-term financial performance; advanced technology development, support technology validation trials with companies whose core competence this is, or could be.
IMPLEMENTATION ACTIVITIES	A20 Need to create and sustain competitive advantage	B20 Implementation fatigue.	C20 Just another improvement campaign; altering individuals to their preferred style via standard etic assessment instruments; Observation, seeing, listening; Interpretation, thinking, reviewing, discussing.

DMM generic example filled in

-SUPPORT

A21 Recognise strategic driving forces: weaknesses and threats;

B21 Select candidate employees via etic personality trait assessment devices. Select existing employees for roles dependent on 'fit'; focus on emphasising strengths and opportunities rather than weaknesses and threats.

C21 Simultaneously understands holistic interactions and relates to challenges faced by directly involved individuals; understands the terminology and concepts used;

-DIRECT

A22 To remain in gameful employment; to remain current in the specialism and develop transferable 'life skills'

B22 Focus on understanding preferred modes via etic personality trait assessment devices.

C22 Detachment to attain an alternate perspective, identify tacit assumptions, solicit comments based on others' observations.

PHILOSOPHY	LEARNING	CHANGE
D1 Personality classifiable by Myers Briggs type indicator. If not part of solution, part of the problem.	E1 Specific learning needs analysis,	F1 Open up to what the individual can change and how.
D2 Theory X - It is only work, and I do it for money. Theory Y - It is what I do because I enjoy it.	E2 Criteria and measures by which performance is assessed. Learn by doing	F2 What does the individual change at the personal level in terms of attitudes, behaviour, perspectives, philosophy
D3 Unconditionally constructive strategy (Fisher and Ury, & Fisher and Brown) Do what is right for oneself and the relationship, irregardless of what the other does.	E3 Learn from a mentor. Learn by observation. Learn by role modelling based on another. Identify values.	F3 Plan activities and guiding metaphors. Putting into practice.
D4 This is what we do, this is who we are, "I'm a welder", this is what we look like - common style	E4 Group norms; Creating all-round performance by balancing own weaknesses with other's strengths	F4 Focus on achieving changes to the focus issue that all can contribute to simultaneously
D5 Team role preferences identifiable via Belbin roles; this is a game we can win, though the competition is not us. We are distinct from what we do.	E5 Performance expectations, challenge to un learn old habits - supervisor becomes team leader	F5 Identify a range of opportunities and distribute them between participants that are specialists
D6 Defined by Organisation or senior management	E6 Who are the key players, the rules of the game	F6 Change as a result of identifying better internal operating model
D7 Centralised control (fit) or Decentralised entrepreneurialism (split)	E7 Centralised lessons to learn hub. Willingness to teach and answer tough questions	F7 Internal customer and supplier relationships. The network created is the source of competitive advantage
D8 Values and cultural ambitions identified. Either: 1) identify deficiencies in others' work and create initiative to put in corrective action, or 2) focus on what we do wrong, and what we can do our selves to put it right.	E8 Organisational learning and learning organisation. Dependent on issues reviewed in perspective and philosophy.	F8 Change as a result of external environment data updates; Systematic and/or appraisal approach or an attitude to continuous improvement. Fact based decision making or intuitive hunches - "go find me data that supports this".

DMM generic example filled in

D9 Change is good. Change is necessary. Change is part of a dynamic system. Change requires specific training, general development and generic learning.	E9 Learning and teaching enabling approaches, techniques, and measures.	F9 Managing transition phase. Aware of risks, monitors key performance indicators, coaches and motivates participants.
D10 Play to core capabilities, reward performance and innovation.	E10 Centralised review of lessons to learn and improvement proposals to ensure global standard methods and component specifications - share best practice; Learn by doing; Systematic and Appraisal approaches	F10 Relationships are managed to form a strategic network for competitive advantage
D11 'any colour as long as it is black' versus market diversification based on introducing variety late in the process while focusing on core competencies	E11 Can become incestuous & hence learning stops or slows. Not invented here syndrome?	F11 Drastic if a new entrant produces a substitute. Could be detrimental to society if external bodies do not have a moderating influence.
D12 Dominate to create stability	E12 Replicated lessons learnt for generic process steps; bespoke undertaken, particularly in petrochemical industry, late in the process, i.e. mixing additives when filling tankers, all materials up to then are common.	F12 Consensus driven - a camel is a horse designed by committee
D13 Operate to take market share from non-cooperative members	E13 Rich source of comparative benchmarks and transferable abstract concepts.	F13 Change to recognition and procedural agreements by consensus. Change to substantive issues, when operating as 'independent traders' permits significant freedom to implement enhancements as free-lancers
D14 Long-term integrated symbiotic relationship based on performance	E14 Member ship of a supplier association allows access to data each partner is willing to share; a degree of openness is required	F14 Each partner has full authority to modify their internal logistics - to optimise flow of materials, money and information.
D15 Works to project budget and time schedules; accepts commissions on the basis of acquiring diverse capabilities.	E15 Learn by doing; learn by poaching staff; learns by proper planning and consultation with the client/customer.	F15 Accepts change since it is a project based business; implements change as a third party; can recommend change projects as part of the viability study or as via consultation services



DMM generic example filled in

D16 Method of evaluating proposals by prospective producer-suppliers/assemblers; will the client accept previously owned goods (2nd hand) or demand new products built to unique specification	E16 Dependent on the responsibility clause in the contract with their supplier.	F16 Changes perception of requirements or ideal solutions to requirements sporadically, especially when an innovation is released or becomes popular
D17 Required to have the deepest commitment to assembler customers and to fulfilling their business requirements by focusing on core competencies.	E17 Usually independently, however can be given 'on a plate' via either kyoryoku kai (membership of a supplier association), by benchmarking or internal technology transfer between affiliates	F17 Autonomously undertaken or resulting from stress created by the need to compete
D18 Make or buy decision. Single, sole, dual or multi-source; Vertical intergration, keiretsu or other equity linkages; Collaboration or adversarialism;	E18 Defined learning function; improvement proposal review panel; reproducing described work - validity; repeating previous work - to gauge stability or for benchmarking purposes	F18 Attempts to create competition via change or tries to keep pace with competitors is a minimum; Accelerate past competitors to more fully satisfy client requirements; kaizen as a way of life & kai kaku for reengineering projects to achieve rapid and drastic enhancements
D19 Providing guidelines and requirements to ensure consistency, health and safety.	E19 Learned institutions - working groups; government quangos, think tanks, policy committees; British Standard/ISO and legal requirements or presidents; University studies;	F19 Nominally adjusts specifications and guidelines as a result of a president, incident or innovation.
D20 Competing to grow, growth through competition. Network competes against network (keiretsu versus keiretsu); create the acceptance of the need to learn, develop and change; never complacent;	E20 Systematic and appraisal approach. Open learning environment; mentoring; skills audit, 360 <sup>0</sup> feedback, seminars, search conferences, role play for set scenarios. Not all lessons will be planned; process consultation undertaken since even the facilitator may not know the answer	F20 Plan, Do, Check, Act cycle; JDI - just do it; selling initiatives to management - supporters, facilitators, participants and recipients, and those otherwise affected stakeholders (reverse marketing) .

DMM generic example filled in

D21 Aims to identify hygiene factors and motivators to facilitate transitions. Clarifies and commits to corporate and individual values.	E21 Learns techniques and applies them in role playing sessions; undertakes analysis; creates/reviews strategic vision proposals.	F21 Sets out the agenda, roadmap and strategic plan. Knows what should be changed; facilitates; has the courage to delegate authority.
D22 Win/Win via assertiveness created by an unconditionally constructive strategy. Quality and leadership philosophy. Learn by doing; being scared but doing it anyway.	E22 Participation in search conferences, awareness training; reviews of case studies & recent projects; preparation and subsequent analysis of internal surveys;	F22 Change starts with decision to change and commitment to enhancing working environment and outputs. Knows what can be changed; has the courage to do so and the wisdom to know the difference.

IMPROVEMENT	TECHNIQUES	RESULTS
G1 Having a go - 'just do it' (JDI); Can be perceived as 'holier than thou'; Adopting the moral and intellectual 'high-ground'	H1 Self directed learning to achieve development; reflective practitioner	I1 Leadership of ideas and of people; Lessons learned and implemented; Pride in one's accomplishments
G2 Refining one's goals. Setting a time scale. Achieving regular successes.	H2 Career planning; Focusing on strengths and opportunities	I2 Achievement
G3 Setting out the agenda. Ask for advice from a mentor or third party ombudsman.	H3 Implementing perspective changes by practicing assertiveness.	I3 Focus on the issue. Not playing games. Taking responsibility. Leading by example.
G4 Understanding and allowing for individuality, developing tolerance to diversity	H4 Exaggeration of existing characteristics.	I4 If positive, more individuals wish to affiliate with the group.
G5 Increased co-ordination and cohesiveness of diverse energies and attributes; Focus on the job and how to improve the job	H5 Training; suggestions; coaching by experienced change agent	I5 Shared recognition, token awards at publicised events
G6 Managed project to switch-over to new system	H6 Electronic data interchange and integration (EDI) eliminates hierarchy except for exclusions	I6 Efficient communication
G7 Recognition, procedural and substantive agreements reached. Flag potential problems early. No putting the spanner in late in a project.	H7 Process consultancy used by management. Unconditionally Constructive Strategy is employed	I7 Achievement, learning, respect for the individual. Data shared in a timely manner. Assertive company associates.
G8 Continuous improvement (kaizen) or rapid step change (kaikaku). Automation, electronic assistance tools, simulation exercises - what if analysis.	H8 Focus groups, subject teams, lone free agents - specialists, free lance project workers, search conferences, engage consultants, encourage lateral thinking approaches to create alternate perspectives.	I8 Gap analysis, comparison with similar organisations and/or with customer's requirements. Tangible results seen as improvement indicators. Real result is the change in organisational culture.

DMM generic example filled in

G9 Encourage front line people - actually doing the work to have two jobs 1) to do the job they are doing, and 2) to improve that job. To improve the relationship with internal and external customers and suppliers (intra- and inter-organisational boundaries are managed by empowered employees).	H9 Inform others of the macro situation, the challenge, identify alternative solutions, explain the chosen intervention, show how plan is designed, explain what is required to succeed, allow time for feedback. Alternatively: Shock, alarm, instruct and measure.	I9 Results are achieved by clients, whom think they identified the opportunities, solutions and implemented willingly.
G10 Recognition, procedural and substantive agreements reached. Flag potential problems early. No putting the spanner in late in a project. Development contracts funded by non-recurring expenditure agreements.	H10 Unconditionally constructive strategy used as part of the 'memorandum of intent'. Formal contracts (legalistic approach) is avoided where possible, except in circumstances where legislation requires.	I10 Achieves superior performance in the business sectors. Key performance indicators benchmarked by other industries with similar processes rather than direct competitors. Shared benefits.
G11 Rate subject to global competitive forces.	H11 Non-public disclosure; massive expenditure on research and development to create 'off the shelf' solutions for possible scenarios, ie threat from a new entrant that aims to break the monopoly	I11 Can create their own wind-fall by imposing on society or industry their own conditions
G12 Implemented independently; once one does, they all do - all reticent to be first, none want to be last.	H12 Non-public disclosure; massive expenditure on research and development to create 'off the shelf' solutions for possible scenarios, ie threat from a new entrant that operates outside the cartel	I12 Subject to macro-economic stimulus and transitions
G13 Implemented ad hoc and soon after the opportunity is identified	H13 Just do it (JDI)	I13 Dependent on the amount of planning and complexity of the improvement
G14 Gauged against demands by the customer or assembler for cost down curves, defect rate reductions, delivery performance rates; shared benefits - savings split between network partners for a win/win.	H14 Joint development initiative for innovation, process stability and capability, joint planning, early involvement, single data bank with data access; non-disclosure agreements (NDAs) in place	I14 Superior sustained peak performance
G15 Implementation according to the agreed plan	H15 Ensuring responsibility is clearly defined, focusing on techniques and skills. Internally managing contractor's own efficiency; external resistance is responsibility of client/customer.	I15 Deliverables are delivered

DMM generic example filled in

G16 Reverse marketing; offering training and education services as part of the augmented product ie more emphasis on services and less on materials.	H16 Typically left to the provider to decide on behalf of the client.	I16 Reliant on providers. Likely only to recognise dissatisfaction if the product or good does not meet expectations. May not recognise satisfaction except when the good or service is referred to by another, in which case this is a function of 'gestalt' perspective (Houston)
G17 Gauged against demands by the customer or assembler for cost down curves, defect rate reductions, delivery performance rates; probably agreed during an annual purchasing function spending round squeeze	H17 Focus on core competencies and efficient techniques.	I17 Superior performance; equalling or surpassing the benchmark rate of improvement.
G18 Focus internally, upstream to suppliers and down stream to customer in this sequence.	H18 Create savings that form the basis of an improvement budget; focus on simplicity, synchronisation, customer satisfaction,	I18 High value add via coordinating efforts of others and adding value by late configuration or point of variation.
G19 Focused on key protagonists for industrial tourists; providing a threshold level of recognised acceptability	H19 Publication and dissemination of formal requirements	I19 Take-up rate of accreditation by third party assessors; number of sales of copies of relevant publications.
G20 Periodic reviews undertaken;	H20 Systematic approach (Barrington's model); technician, craftsman and professional levels of competency. Techniques may be perceived as secondary to primary activities, hence take up/utilisation rate may be low.	I20 Conscientious usage where required

DMM generic example filled in

G21 Verify a plan has been created; responsible person is identified; person undertaking the activity is agreed; collaborating protagonists agreed; people to be informed are listed.	H21 Time management - delay, delegate, ditch & do. Sponsoring initiatives; providing -securing or reallocating resources; acting as ombudsman, facilitator, mentor, project milestone reviewer, responsible person.	I21 Success is achieved through others; helping others to achieve greater results lets support staff achieve greater results. Helping others to help themselves - dependency, independence and inter-dependency.
G22 Achieving a level of skill in techniques without pressure to optimise.	H22 Application and optimisation of lessons learnt, tools, skills, philosophies etc, within the framework created by awareness of alternative perceptions that are conducive to achievement.	I22 Achievements derived from enhancing capabilities and performance

## DRIVING FORCES

J1 Sense of being an individual - Alpha male or female; Ability to outperform and become the benchmark or leading example

J2 Desire to achieve more, or for longer. Feelings of elation associated with success.

J3 Fewer interpersonal conflicts - hygiene factor is eliminated or reduced.

J4 Exaggeration of existing characteristics.

J5 Motivation resulting from achievement (Montgomery, 1987, The truth about success and motivation, Thorsons Publ.)

J6 More efficient communication

J7 Motivated to share the "company way"

J8 Sustained competitive advantage over competitors; change initiative has gained momentum and direction, Focus on strengths - positive psychology, emphasis on uniqueness and core competencies, stimulate creativity and can do attitude.

J9 Desire to start another project or mentor other change projects as an agent of change.

J10 Potential to reduce overhead marketing costs by focusing on core contracts. Shared benefits by focusing on costs rather than unit price.

J11 Sustaining the status quo

J12 Sustaining the status quo

J13 Entrepreneurial enthusiasm

J14 Elevating sustainable performance to create leadership and competitive advantage

J15 Exploring opportunities created by being able to sell based on an enhanced reputation derived from further experience



J16 Moving to the next stage or 'jumping up the social or prestige ladder'

J17 Opportunity to export superior performance to other industry sectors using process capability improvement and management to expand the core competence set.

J18 World class manufacturing, global presence with local variants.

J19 To remain current, or in advance of industry specifications, particularly where humans can be affected

J20 Sustain the rate of change - keep the ball rolling;

J21 Promote  
strengths and explore  
opportunities;  
entrepreneurialism;

J22 Build on  
achievements

## Interpretations Matrix

TARGETS	PROCESS		
	DRIVING FORCE	PSYCHOLOGICAL	PERSPECTIVE
INDIVIDUAL - Alison Davis	A1 Desire to enhance career prospects and current salary	B1 At start of the project, self developing	C1 An individual in charge ie with responsibility and little authority.
PERSONAL - Alison Davis	A2 Desire to spend less time at work	B2 Recognised psychological games occurring in both domestic and work settings	C2 Too focused on minutiae due to work load
INTER-PERSONAL	A3 Desire to reduce aggressive tendencies by the Bear and team leaders	B3 Preparedness to accept responsibility; lack of trust; little data transfer, especially on strategic matters	Analysis of social dynamics
GROUP - Principal protagonists - the focus group led by Alison Davis - Personnel and Administration Manager	A4 Desire to reduce work-load, work more strategically and as an internal change agent	B4 Eager to learn; trained psychologist and HRM manager,	C4 Initially clouded perspective due to overwork - 60-70 hours/week
TEAM - Focus group plus new recruits to administrative roles	A5 Increase administrative head count to reduce unpaid overtime	B5 Team built around providing a better service, on time, more reliable	C5 New members focused on existing direct activities; original focus group focused on improving direct activities and modifying internal psychological contracts (blame culture) between management and shop floor
ALLIANCE,	The creation of an internal alliance between middle management	B6 Herd psychology - sticking together;	C6 Initially none - conditions of work did not stimulate motivation, nor allieve hygiene factors
HIERARCHY	A7 Blame culture between senior management and shop floor employees	B7 Avoid direct contact to avoid face to face confrontation	C7 Personnel and Admin used as a conduit between senior management and shop floor

ORGANISATION - M E Ltd	A8 Responding to assembler customers' demands - volume requirements	B8 Willing to work and improve	C8 Lack of visibility to customer assemblers' long range volume plan (LRVP)
CHANGE DRIVER - Direct customer purchasing (Automotive Assembler),	A9 Competitive advantage;	B9 Assembler has the initiative;	C9 Emphasis on key performance indicators, assessed by purchasing representatives.
ALLIANCE - M E Ltd's European parent company	A10 Market share	B10 Independent business units	C10 Real rather than synthetic or other substitute materials finished by hand to add prestige value
EXTERNAL BODIES - Indirect change driver (Coventry University - David Newlands)	A19 (IND) Need to conduct empirical field research	B19 Act as old sage or honest broker;	C19 Analysis as external observer
IMPLEMENTATION ACTIVITIES	A20 M E Ltd middle management wished to retain approved supplier status	B20 Review of psychological and psychometric support tools - etic behaviour models	C20 Move from a focus heavily on work to improving the work done
-SUPPORT activities by the focus group	A21 Support staff can only climb as high as direct employees' performance and entrepreneurialism allows	B21 Fear is eliminated; Delegation is the norm	C21 No academic can teach us since we are at the leading edge.
-DIRECT by shop floor and management	A22 Performance based bonus payments	B22 What's in it for me?	C22 Perspective is limited to the training brought to the company, how much people will listen to their ideas and the training received within the company - are they a 'full' member of the 'club'

PHILOSOPHY	LEARNING	CHANGE	IMPROVEMENT
D1 Aimed to increase authority and delegate to trained employees	E1 Acquired and adopted attitude and behaviour guidelines for use in domestic situation	F1 Decision to commit to adding value as an individual by leading by example	G1 Self improvement
D2 Focus on receiving recognition	E2 Acquired and adopted attitude and behaviour guidelines for use in work context; acquired an expanded perspective	F2 Created, adopted and implemented a personal development plan	G2 Awareness training used in context
D3 Desire to lead by demonstration; prepared to accept being blamed and provide solutions	E3 Greater understanding of roles	F3 Leading, analysing and recognising neural linguistic preferences used by others; recognition of types and preferred styles - Belbin, (Myers - Briggs type indicator not used)	G3 Emphasis on hygiene factors and motivators
D4 Wanted to make a difference to the company and increase salary by increasing personal value via self development	E4 Learn by analysing and open discussion to identify opportunities	F4 Focus group realign their activities to become principal protagonists in the preparations for the customer audit	G4 Creation of proformas, minutes to meetings,
D5 Moved from service provider to service and solution provision	E5 New recruits learn routine work;	F5 Recruited and trained extra staff to take on routine activities in order that the focus group could provide solutions	G5 Improvement based on reduced stress load; company receives a better service; reduced unpaid overtime; clearer roles and responsibilities
D6 Initially, workers work, managers worry about detail and performance.	E6 Other departments made similar proposals -	F6 Creation of a triadic relationship between management, solution providers and shopfloor	G6 Triadic relationship overcomes serial relationship deficiencies
D7 Tayloristic, non-human approach adopted by senior management; little work study undertaken, initially learning by sitting next to Nelly.	E7 Tacit learning to respond to solution providers	F7 Target of blaming changed from each other (management and shop floor) to solution providers	G7 Open communication between management and workers for substantive issues

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D8 Tacit philosophy: customers can take it or leave it because we will respond if they do take it	E8 Needed to learn how to improve;	F8 Would be imposed 18months after the start of this research project by their assembler customers. Number of new recruits significant (up to 40 per week) during new product ramp up;	G8 New recruit training programme developed (and subsequently scrapped by the Bear)
D9 Tayloristic perspective of shop floor activities; continuous improvement;	E9 Rolling out standard training packages to suppliers	F9 Can be reliant on supplier being willing to change, accept externally provided training or adopt best practice	G9 Annual improvement targets; content if improvement roadmap targets are achieved
D10 Open competition between sites; responsiveness	E10 Benchmarking from captive companies	F10 Adoption of best practices	G10 Improvement via explicit data creation, measurement and monitoring
D19 Act as 'Chair' at meetings; Help those to help themselves by undertaking research via Schein's process consultation activities	E19 Provide M E Ltd focus group with their own customers' requirements, audit criteria; support key protagonists to start to reduce administrative burdon (time management) and learn how to provide solutions and accept being blamed	F19 After hours meetings focused on clarifying the situation; focus group facilitated to create an improvement plan;	G19 Implementation undertaken by focug group, backed up by regular off site meetings and analysis
D20 Aim to modify or eliminate the blame culture and become more valuable as an individual	E20 Provision of courses and seminars;	F20 Changing who we are as well as what we do	G20 Focus on effectiveness (doing the right thing) as well as efficiency (doing things right)
D21 Reports reviewed of exceptional data only; Delegation is the norm	E21 Assimilated the changes by mental try-outs; provided with reading material and discussed the preparations required - invented twice - once in the mind then in reality	F21 Focus group members' attitude and tolerance to blame enhanced	G21 Providing justification to senior management for the need to allocate resources - department enlargement, emphasis on preparation activities to 'bluster' the customer auditors
D22 Responsibility to do the job and to improve the job	E22 Tacit learning since the data selected by the focus group for their own pre-conditioning was not rolled out; explicit learning by transferring best practices between manufacturing cells and plants	F22 Occurred as a result of a new psychological contract being introduced; implement facilities changes dependent on product roadmap and build plan	G22 Improved relationship between shop floor and management since they could blame Personnel and Admin knowing they would provide an insight into the problem since they were more distant from the daily detail

TECHNIQUES	RESULTS	DRIVING FORCES
H1 Off the shelf activities (Boydell and Pedler (1981)	I1 Increased confidence	J1 Achieve full potential - increases salary expectations and perception of self value
H2 Self and situational awareness training	I2 Increased confidence	J2 Repeat experiences else where or expand the programme
H3 Role play undertaken during off-site meetings with the facilitator	I3 Increased dynamism; assertiveness, eliminating aggression and submission	J3 Sustaining communication and dialogue
H4 Creation of a history via synthesis - reverse time plan extrapolation with time reset for future real application	I4 Cognitive dissonance occurred thus they adopted their synthesis	J4 Sustain momentum
H5 Recruit one every 6 weeks to stagger induction and training load	I5 Increased team from 4 for 8 members plus 2 other special assistants	J5 Consolidate the new team
H6 Modifying the relationships by creating an alternate Target	I6 Solutions created; relationships modified; Management and shopfloor employees communicate	J6 Sustain the new status quo
H7 Ad hoc	I7 Reinforced positions and increased the number of solution providers; Blame culture not modified,	J7 Maintain the new status quo

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H8 Applied cognitive dissonance and cognitive behaviour modification	I8 Stabilised contract - commitments gained from their customer not to transfer business to other suppliers	J8 Closer ties with its assembler customers
H9 Use of purchasing leverage to impose training and improvement regime via Tayloristic attitude	I9 Dependent on quality of training, receptiveness to learning and adoption where applicable	J9 Catch-up with other direct competitors, increasing the rate of improvement
H10 Replicate best practice	I10 Absorb proformas into normal practice across the subsidiaries	J10 Replicate solutions
H19 Face to face interviews undertaken by Newlands at M E Ltd with representative personnel from management and shop floor.	I19 Pioneering case study data collected	J19 Validate approach and internal dynamics
H20 Implementing change without explanation or warning - leading by example	I20 Monkey see, monkey do - imitating and mirroring used at a subliminal level	J20 Leading by example, Creating a new company culture
H21 Brain storming; creation of dummy minutes to meetings and filled in proformas that provide a 'track record' of attempts to improve	I21 Focus group singled out for merit by the assembler customer	J21 Sustain the initiative
H22 Pre-shift meetings; training provided based on plans that gauge appropriateness via length of service ie defined employee development plan used as a template for all shop floor employees	I22 Direct activities audit undertaken and positive feedback provided to M E Ltd by their assembler customer	J22 Congratulations for little effort, desire to repeat or enhance the situation



## Interpretations Matrix

TARGETS	PROCESS		
	DRIVING FORCE	PSYCHOLOGICAL	PERSPECTIVE
INDIVIDUAL - Each established employee (significant number of contractors working at NP that are excluded from certain development courses)	A1 Achievement, learning, respect for the individual; coming out of one's comfort zone	B1 Psychological profile assessed during candidate screening at interviews; updates provided for awareness and effective team-work	C1 Dependent on individual ranging from micro-problem solving ie software engineer through to macro-complete supply-chain and product creation processes ie logistics project engineer
PERSONAL	A2 For some: focus on achieve-able tasks, stroking, need to be in the company of others with similar challenges; others : learning, participant observation, exploring strategies, concepts and implications	B2 Herd psychology - need for safety in numbers in a global corporation	C2 Adding value by contributing both technical input; understanding one person can influence, yet can't change the company
INTER-PERSONAL	A3 Respect for the Individual;	B3 Assertiveness rather than aggression and submission;	C3 Training during induction on security, keeping secrets, data gathering
GROUP	A4 Clique sub-cultures operating based on educational background and nationality	B4 Attempts by the company to limit group think by promoting individualism in the manner activities are undertaken by loosely defining generic processes	C4 Open discussion between specialists;
TEAM	A5 Project based product development organisation	B5 Concurrent engineering is more than doing things simultaneously, it is a state of mind	C5 The core product (augmented product including service provision and accessories is left to Logistics Project Leader)

ALLIANCE,	A6 Transferability of technology (commonality, carry-over and compatibility); Ability to transfer established employees and contractors between product development (PD) programmes; Bridging cultural differences between PD sites in various countries	B6 More in common than distinguish between the parties; Diversity of target market creates different business cases and strategies	C6 Ignores external models of corporate behaviour; Internally searching for the best fit solution to achieve maximum and sustained peak performance
HIERARCHY	A7 Effectiveness; fit (centralism) and split (decentralism)	B7 Trust in the individual to make the best selection from solution options available	C7 Matrix reporting structure to achieve dual perspectives - functional (content) and line management (process)
ORGANISATION	A8 Achievement and leadership in the chosen business sector	B8 Unified front to external parties (the company line)	C8 Balancing political, economic, social and technical issues; focus on strengths and opportunities
CHANGE DRIVER	A9 Provide a third node to create a triadic relationship thus providing an enabler	B9 Deflect, dilute or become the blame focus;	C9 Ombudsman; Facilitator; Leads yet does not dominate
CLIENT,	A16 World leadership for the standard used in subsequent generations of devices	B16 <i>Face and On</i> typified by Japanese societal norms; Deep seated need to dominate or lead	C16 Leader by implementing first the generally perceived best route to success
SUPPLIER	A17 Achieve volume capability, capacity and delivery	B17 Create dependence	C17 Strategic alliance to high volume customer;

CUSTOMER	A18 Securing adequate volume for a rapid growth trajectory	B18 Pay attention to suppliers; allie with partners; Trust and create trust with discipline and ethical actions	C18 Securing supply capacity at suppliers by reverse marketing while in competition with other customers
EXTERNAL BODIES IMPLEMENTATION ACTIVITIES	A19 A20 Implement training and education regime for key employees; provide opportunities for involvement for all interested parties	B19 B20 Profile seminars; Key note speakers; 'Christmas Lectures'; Company Way off-site status reviews	C19 C20 Mind-openers for managers and established employees (O'Keefe, J. 1994, Mind Openers for Managers, Harper Collins, London)
-SUPPORT Staff	A21 Rapid expansion in head-count; need to propagate and preserve the original values and culture of the business	B21 Provision of training staff to provide and lead semi-structured seminars focused on clarifying individual employee's preferred styles using etic type indicator devices	C21 Focus on attitude for continuous improvement supplemented with formal training in techniques and appraisals
-DIRECT Employees	A22 To consolidate their established position	B22 Need to 'fit in'	C22 Just one of many new faces; unsure of what to do and how to do it

PHILOSOPHY	LEARNING	CHANGE	IMPROVEMENT
D1 Dependence on the product road map, independent work design and project plans; interdependent on support specialists and their product development programme	E1 Lessons to learn from historical data and challenges; lessons to learn from projections and 'what-if' scenario analysis; invited guest speakers give 'Christmas Lectures';	F1 Based on agreed objectives set during twice yearly investors in people appraisals	G1 Implementation of self improvement action plans
D2 Acceptance of the company values - achievement, learning, respect for the individual & customer satisfaction	E2 Awareness of own preferences; coping strategies; 360° assessment feedback process	F2 Decision to take action based on analysis of data showing perceptions of others including two managers	G2 Not directly assessed with a formal appraisal; 3 month trial period at start of working with the company allows a period for management and employee to decide suitability
D3 Tolerance of diversity; security concerns create the environment for secrecy	E3 'working together' training events provided to established employees; Role play; understanding others	F3 Understanding and commitment (via signed contract after job is offered) of a set of quantitative examples demonstrating generic types of un-desireable behaviour - "School yard rules"	G3 Implement and maintain assertiveness; use of an unconditionally constructive strategy
D4 A group of individualistic specialists with a common aim	E4 Type indicators taught to functional specialists; lessons to learn recognised resulting from individualism	F4 Adopting best practice - can be followed blindly	G4 Individuals are recognised; group discussions - share experiences; peer group provide support
D5 Working for product creation programmes under the guidance of operations, logistics and sourcing management	E5 Team roles (Belbin) clarified for functional specialists; team building events (all established employees associated with a product development programme)	F5 Individuals improve due to peer pressure or to fill a vacant role	G5 Identifying potential gaps between capabilities and expectations - overcoming fear or reticence

D6 Sell solutions to the product development programme and to the factory; Attitude is that other companies can not teach the leader in the field what it must do to succeed	E6 Focused learning events are used as well as standard training modules	F6 Strategic division of labour; creation of focused centres of excellence	G6 Red and Blue teams compete to create the best solution; results are combined in implementations
D7 No-formal hierarchy document anywhere in the company; individuals establish their own networks	E7 Negative: learning how to play the system - playing one manager against the other to do the minimum; Positive: Dual perspectives provide multiple opportunities to benchmark and analyse tacit assumptions	F7 Dynamic changes based on ability and performance; responsibility and authority goes to those that have demonstrated abilities	G7 Darwinian natural evolution; Progress resulting from selection criteria, opportunities and internal candidates
D8 Cultural values (customer satisfaction, learning, respect for the individual and achievement)	E8 Company's teaching institute 'Academy' provides standard training packages and special lectures from guest speakers	F8 Adapting as a result of specifically attempting to reduce bureaucracy and chaos	G8 Multiple iterations due to changing product development roadmap
D9 Solution provider and accepts being blamed; supports management's improvement or development programme	E9 Provides lessons to learn, case histories, mathematical models, theoretical principles; listens to the client and summarises; undertakes learning by asking open questions	F9 Acts as a mentor, champion, consultant	G9 Knows what is possible; set the height of the bar; proposes a set of phases;
D16 Test bed for technology	E16 Creating standards for assemblers to meet; providing a lessons to learn centre to benchmark candidate assembler's products	F16 Attaches any good idea to the specification list	G16 Rapid due to the all inclusive best practice paradigm in operation; Define the situation for assemblers
D17 Retain contract through the production life cycle and land the order for the next product	E17 Learning for mass production, learn techniques and expectations for extremely subjective quality requirements	F17 Supplier develops themselves; Customer assists; non-recurring expenditures	G17 Continuous during production; Step jump enhancement between product iterations

D18 Pay a premium to secure supply; Limit supplier's access to relevant data - security; focus on component and process capabilities, and maximising manufacturing capacity	E18 How to increase flow velocity through the plant - logistics; How to minimise component count, hand assembly time; how to increase yield (first time test passes); Acquiring lessons to learn from all areas of activity	F18 Focus on core competencies;	G18 Roadmaps created and performance compared to plan
D19 D20 Continuous professional development; Benchmarking against best in class and the ultimate standard; Quality philosophy	E19 E20 Learn by doing; Learning via guided seminars; Lessons to learn from historical project reviews/end of project reviews; Technical appreciation training seminars	F19 F20 Change management - top down, bottom up; middle up-down predominated; Shifting perspectives of collaborators in the established network of contacts;	G19 G20 Review processes; peer review (360° feedback); Change for change' sake; centralism versus decentralism; encouraging leadership
D21 Understanding is fundamental to acceptance of preferences and creation of improvement plans	E21 Self assessment and assessment instrument results are compared; descriptions of types explained	F21 Local site mentors assist by creating the environment to succeed	G21 Agreed improvement objectives
D22 Just do it; Be honest; Ask if not sure	E22 Formal learning events and relying on intuition or experience from other companies or industry	F22 Implement lessons learnt in daily work	G22 Review plans prior to start of activity; Review progress at key milestones

TECHNIQUES	RESULTS	DRIVING FORCES
H1 Mentoring contract established (key challenge is the manager is the mentor)	I1 Some improve by balancing preferences with development of 'uncomfortable' preferably avoidable modes; others ponder (understanding of preferences reinforced preferences)	J1 Develop the skill base to be effective and able to mentor others as required
H2 Participation where required - jumping through the loops; Participation in anything new; ensuring visibility "who knows you exist" or "who can vouch for you"	I2 Visibility, participation, contribution, integration, appreciated by others, reputation grows	J2 Sustained demand for services provided
H3 Formal contract - terms and conditions	I3 Negotiated and amicable best solutions	J3 Sustain network of collaborating and coevolving relationships
H4 Creating awareness of 'group think' and creating the environment for self expression without fear of reprisal	I4 Increased individuality demonstrated; Shared information pool; Systematised learning available for new recruits	J4 Identified and adopted norms
H5 Awareness training; fulfilling the requirements for the project	I5 Increased functionalism and interfunctional co-operation	J5 Sustained peak performance in a dynamically changing environment

H6 Stimulated competition used to create motivation to compete; Recognition is given to all participants	I6 Aimed for increased commonality, compatibility and carry-over to increase the range of products while reducing obsolescence risk and costs	J6 All on the same side; working for win/win; multiple projects at a range of stages 'cross subsidise or finance' other projects
H7 Appraising performance (achievement) and indentifying opportunities to use strengths	I7 Changes implemented rapidly to reduce risk of not achieving the desired results; Leadership traits are developed in all established employees	J7 Achieve results with the network of employees
H8 Changing the goal-posts based on updated data and understanding of customer requirements	I8 Multiple restarts for product development programmes; Few products at ramp-up are the original idea or specification	J8 Sustaining competitive advantage (brand and market leadership by product type and volume)
H9 Complements existing company quality and learning processes with simple and effective analysis tools	I9 Facilitated improvement that contribute to the improvement metrics road-map	J9 Satisfied clients;
H16 Corporate listening; Providing test environment; close monitoring of assembler's activities	I16 High quality goods offered to end users; Sell what sells	J16 Maintain client's leverage over assemblers
H17 Supplier Development	I17 Profitability through exceptional results based on customer's performance metrics	J17 Profitability and growth (volume, core process technology acquisition, unique abilities, service provision)



H18 Outsource all non-core activities and component manufacture; modularise; delay the point of variation	I18 Growth to a sustainable head count and production capacity	J18 Growth and sustainability; profitability and confidence
H19 H20 Statistical methods; Process stability; Failure mode and effect analysis;	I19 I20 Aim to be & achieve world class	J19 J20 Stimulate and sustain a pace of change
H21 formal training in techniques and appraisals	I21 Feedback forms analysed; Monthly reports reviewed; Follow-up session chaired including presentations, questions and answers, and informal chats	J21 Sustained peak performance by motivating and empowering individuals
H22 Academic techniques applied; Make up own software and pro-formas; Scenario analysis; Network with others in a similar predicament to find presidents and emulate or superceed them	I22 Dependent on the amount of networking done and information shared;	J22 Achieving and maintaining average performance for minimum involvement

Interpretations Matrix

TARGETS	PROCESS		
	DRIVING FORCE	PSYCHOLOGICAL	PERSPECTIVE
CHANGE DRIVER - NP Ltd	A9 World class quality and volume production to meet expanding demand	B9 Secretive concerning product styling and business activities	C9 No more people, no more plants (facilities)
PARTNERSHIP - Generic (from NP perspective)	A14 Exploitation of the expanding market (volume increases globally)	B14 Partner with key technology providers; associate with volume producers;	C14 Production volumes due to brand affiliation with the sector; Second on basic technologies; Leader on technology integration to create new product sectors
SUPPLIER - PU Ltd	A15 Co-ordinating a new supply chain of independent companies	B15 Deep desire to satisfy NP,	C15 Lack of awareness of actual problems or where products were in their supply chain; NP perceived PU as "the most unprofessional I've ever worked with"
SUPPLIER - YM Ltd	A16 Reestablish trading with NP Ltd	B16 Deep desire to demonstrate superior capabilities	C16 Pre-requisites in place to provide NP with superior component sets; this is their source of competitive advantage;
SUPPLIER - AAP	A17 Become a supplier to NP Ltd, sell anodizing capability	B17 Deep desire to sell production capacity	C17 Competitive edge based on unique anodizing technologies

CONTRACTOR - UDC	A18 Maintain the status quo - 12 people on NP Japan payroll; Learn more about processes used at NP Ltd.	B18 Deep desire to be utilised by NP - anticipation of next product ramp-up	C18 Limited perspective - originally a manufacturer of karaoke machines; did not try to diversify once the 'cushy' contract with NP had been signed
IMPLEMENTATION ACTIVITIES	A19 Standardised performance criteria to be met	B19 Specific culture training provided; speak only English in order to not be considered lower;	C19 Culture training and mind openers
-SUPPORT - NP Representative	A20 Achieving competitive advantage via performance metrics	B20 Problem focused; promotes trust as a result of ethical behaviour; empathy	C20 Understands the scenario overview and possible complications and implications
-DIRECT - Supplier Personnel	A21 NP Ltd requirements for volume, quality and delivery reliability	B21 Likely to start out weary;	C21 Understands the detail; perhaps 'blinkerred'

PHILOSOPHY	LEARNING	CHANGE	IMPROVEMENT
D9 Growth through specialising in core activities; Growth via outsourcing accessories and badged production of mature products	E9 Provided quantitative analysis to support 'fact based decision making'	F9 Did not change logistics strategies despite analysis "it is not in the strategy. We won't put it in the strategy"	G9 No improvements made to logistics except change from PU to PF;
D14 Necessary to maintain competitive pressure on suppliers and to optimise production capacity by division of labour, design and production activities	E14 Learn by outsourcing; Retain core technology lessons to learn activities - especially part placement and part and process design	F14 Implement and sustain partnerships with key suppliers and technology creators	G14 Integrate technologies to reduce component count and suppliers; licence technology or pay non-recurring expenditures (NREs) to develop or acquire technology
D15 Compliant with NP plan to have a supply chain of buy and sell relationships	E15 Learned to sell capacity of in-house capabilities and avoid chains; Learning by mistakes during tooling preparation	F15 Move production of next product to PF	G15 Completely incompetent at managing or co-ordinating their supply chain
D16 Used by NP Japan, capable of satisfying NP UK; Mass production preferred (5million units plus)	E16 Resisted suggestions to be provided training	F16 Change programme already in place though not explained to NP	G16 YM continuously undertake in-house process development;
D17 Willing to explore technical challenges;	E17 Massive leadership in anodizing; had an improvement plan and learning partners (Mitsubishi keiretsu)	F17 Flexible anodizing technology; change materials from Aluminium to Magnesium alloy	G17 Already had a supply chain capable of 97% yield end-to-end

D18 UDC activities are necessary as a 'last chance filter' for NP products in order to minimise 'out of the box failures'; thus ensuring relationship with retail and distribution chain is not tarnished	E18 UDC requested an explanation of NP product development process and milestones	F18 Newlands presented a situation likely to occur; UDC senior management defined activities - working backwards from expected launch date UDC had to start the next day to be ready with their component they were to design and make	G18 Formalised plan template and estimated durations; more clarity of UDC processes requested
D19 Asian philosophy courses; Know the other and you have already won - do background research on Target	E19 Technique training seminars - supplier quality programme; Feedback to suppliers from audits	F19 Business process reengineering planning; Process improvement initiatives	G19 Radical improvement (kai kaku) or continuous improvement (kaizen)
D20 Change driver facilitates; clarifies the present position and the problem; lets Targets identify possible solutions and propose their own projects	E20 Black belt training	F20 Promote process improvements - especially internal logistics solutions	G20 Macro supply chain logistics considerations; product designed to fit the existing logistics infrastructure
D21 Target supplier undertakes the activities; training	E21 Process owner training	F21 Process improvement suggestions made; adopt an attitude of continuous development	G21 Internal logistics optimisation

TECHNIQUES	RESULTS	DRIVING FORCES
H9 Search and audit potential suppliers; sells participation in a product concept	I9 NP UK - poor logistics performance; Analysis likely to remain dormant until turndown in global demand stimulates supply chain reengineering	J9 Working product solutions rather than optimised processes
H14 NREs; Joint investment for tooling; Focus on core product (should also focus on accessories and service providers)	I14 High component unit price	J14 Component technology leadership via partnerships
H15 Coping strategy adopted by NP purchasing - expediting on a daily basis	I15 Produced 90,400 of an expected 300,000 plus build plan; ramp-up late, late deliveries and incomplete batches; significant rejection rate at NP; multiple inspection set up at PU; PU only company in that supply chain to break even	J15 NP - Create an effective supply chain with PF, (PU's parent company); PU - sell capacity to NP's competitor what required processes PU alone could provide
H16 YM reverse preconditioned NP Japan representative; NP UK representatives impressed by process technology available, not by attitude	I16 YM not used due to change in product development roadmap - real metal aesthetic parts to be sourced	J16 Find another product development programme to sell to - not necessarily NP
H17 Technical discussions undertaken;	I17 NP decided to focus on Magnesium and not use AAP at all, even for anodizing	J17 Recognised preference to focus on aluminium

H18 NP send representatives to understand UDC; Newlands acted as representative of NP to facilitate by acting as a Chair, Shaper and Facilitator	I18 At the end of the period of research, zero shop-floor employees, 12 employees on NP pay role; zero production output	J18 Maintain the status quo; closer relationship with NP
H19 Set expectations; Deliver training materials; Facilitate suppliers' activity planning sessions; agree objectives; mentor as required	I19 Assessment of effectiveness using feedback forms and actual results compared to expectations defined by the process improvement target roadmap	J19 Ensuring adequate and enhanced supply of quality components and modules
H20 Training suppliers to yellow, green or black belt quality understanding;	I20 Training delivered;	J20 Ensuring techniques and implementation are successful
H21 From-To analysis, material process flow analysis;	I21 Training put to use to make activities and product better, faster and cheaper	J21 Successful implementation and tiering down lessons to lower tier suppliers; creating benefits shared with NP; increasing competitive advantage to merit orders from other customers